

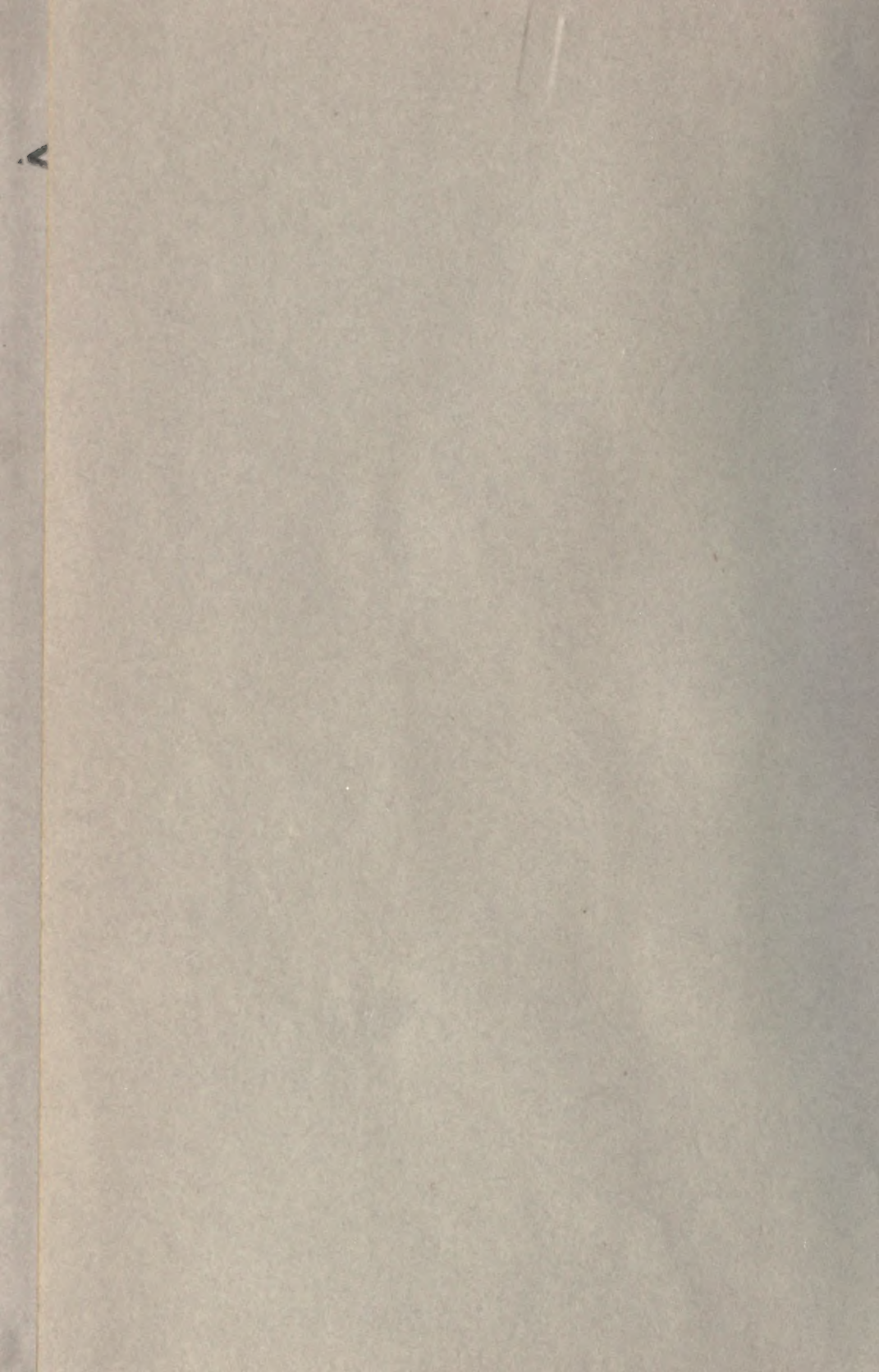
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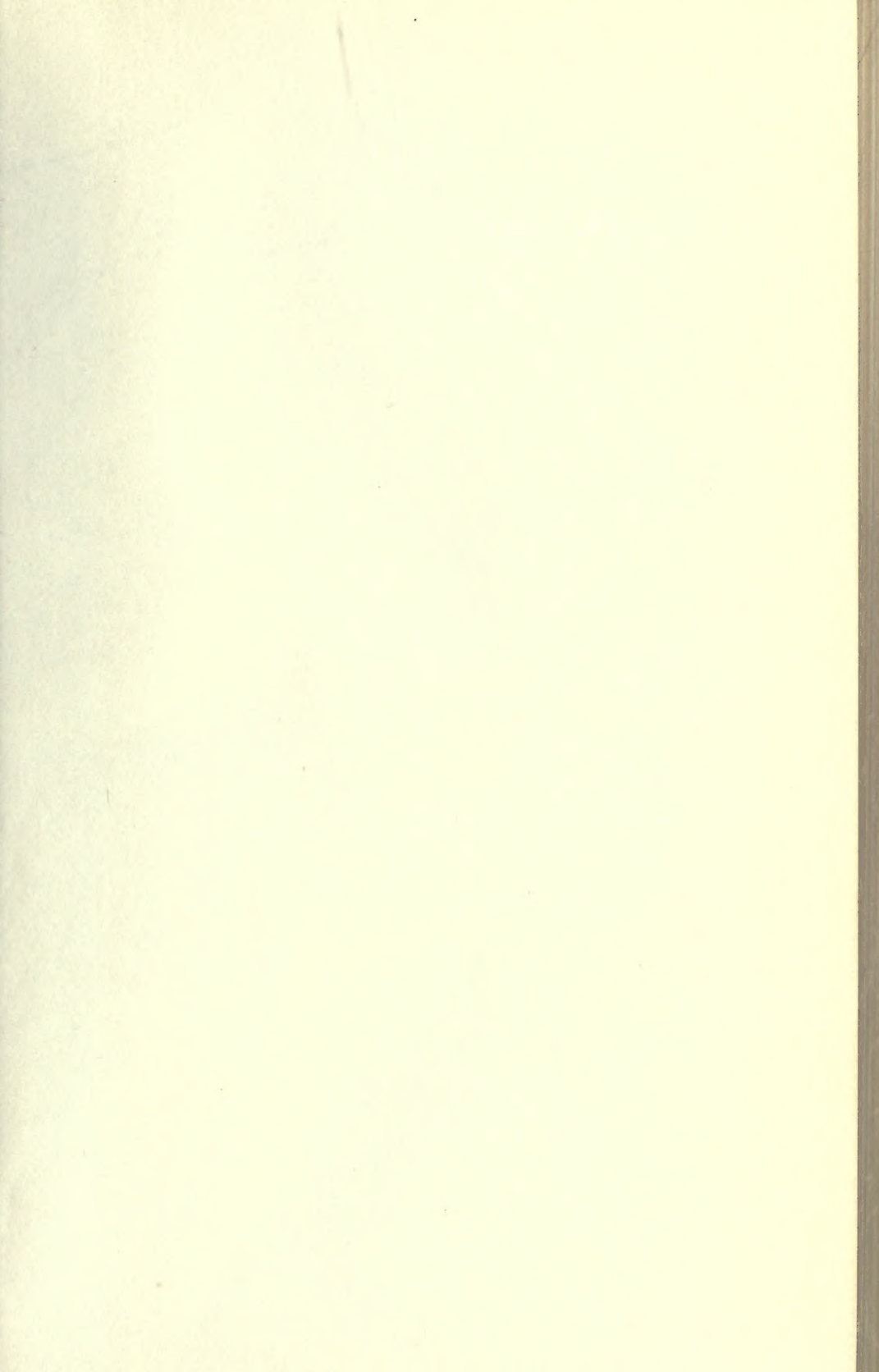


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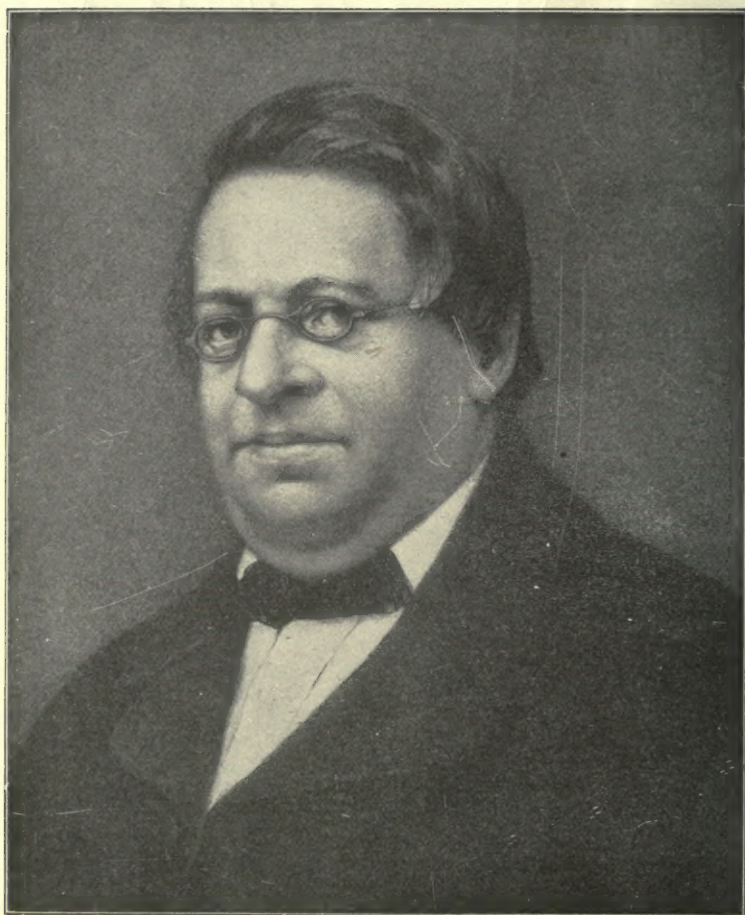






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Tony Perriach



E. H. RUDDOCK, M. D., PH. D.

AUTHOR'S STATEMENT.

In the preparation of this book over ten years of labor and great expense have been devoted to the collection, both in this and foreign countries, of Food and Harmless Home Remedies for all diseases, which will neither injure health nor destroy life.

VITALOGY

OR

ENCYCLOPEDIA OF HEALTH AND HOME

ADAPTED FOR HOME AND FAMILY USE

BEACON LIGHTS FOR OLD AND YOUNG, SHOWING HOW TO SECURE
HEALTH, LONG LIFE, SUCCESS AND HAPPINESS, FROM
THE ABLEST AUTHORITIES IN THIS COUNTRY
EUROPE AND JAPAN.

GEO. ^{rg}P. WOOD, M. D.

E. H. RUDDOCK, M. D.

Authors of "A Text Book of Modern Medicine and Surgery;" "Consumption
and Diseases of the Lungs;" "Essentials of Diet;" "The Vade
Mecum;" "The Ladies' Manual;" "The Pocket
Manual;" "The Stepping Stone;" "Diseases
of Infants and Children;" etc.

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1906.

VITALOGY ASSOCIATION.

CHICAGO.

NEW YORK.

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M. A. DONOHUE & COMPANY
PRINTERS AND BINDERS
407-429 DEARBORN STREET
CHICAGO

PREFACE.

THIS work, it is believed, stands in no need of any elaborate prefatory introduction, nor is it sought to bespeak for it from its readers any more favorable consideration than its merits entitle it to demand. It is confidently placed in the hands of an intelligent and discriminating public, in full assurance that it will prove an instrument of constant usefulness and a possession of inestimable and never-failing value.

It will be found to contain extensive and useful information of unusual practical value, on subjects that are of vital and paramount importance to every individual, including the physical well-being, comfort and happiness of man from infancy to age.

In this age of education and progress, the Science of Health is no longer the exclusive possession of a profession, but is made an open book for those who have the wisdom to learn that which more nearly than anything else concerns their lease of life, the extent to which it is to run, and their capacity for its best enjoyment.

These pages embody the wisdom and experience, and best results of years of practical observation, of prominent and enlightened physicians, upon the simplest and most effectual methods of promoting health, overcoming disease, and prolonging life.

The knowledge here imparted, and explicit and effectual instructions given for its application to the preservation and restoration of health, in all stages and conditions of life, are worth more to a family or individual than all the strong drugs in existence, leaving out of consideration the fact that it will enable its readers to dispense in a great measure with the costly services and the nauseous drugs of the apothecary.

Particular attention is directed to the "Food and Home Remedies," in the departments on diseases, which have of late years been so extensively employed in Europe and Japan, and which have

PREFACE

never before been given in any American publication. There are also given the various new remedies of like character of our own country, which have recently come into use, and which have demonstrated their success in the cure of physical ailments. These remedies will be found as easy of access as they are inexpensive and safe, reliable and effectual; and they are free from the dangers attending the use of poisonous or deleterious drugs, which while removing one disease too frequently pave the way for some more dangerous malady, or undermine the constitution.

The merits of this book are not obscured by any effort to mystify its contents with high sounding phrases, or euphonious but incomprehensible technicalities. Everything will be found in plain, pointed and easily apprehended language, and condensed so as to convey its lessons in the most direct and least ambiguous terms. It makes no demand for professional learning or hard study. The *rationalc* of treatment in all cases is given in such simple and thorough manner that the commonest apprehension will be able to utilize the remedies intelligently and successfully, and the average reader can avail himself of its aid as readily and as effectually as the most accomplished scholar.

There are embodied in this book, departments adapted to the views and requirements of the adherents of the different schools of Medicine; while the owners of Live-stock, or those interested in Horticulture, will find much that is new and of practical value and utility, that will be certain to challenge their approval and greatly conduce to their advantage and profit.

DIVISION FIRST.

NEW DISCOVERIES.

WONDERS OF LIQUID AIR.

The most important discovery of the last years of the nineteenth century was the discovery of the process of liquefying the atmosphere we breathe, and that at a merely nominal cost. That the air could be liquefied was known many generations ago, but the cost of securing even a few drops was more than \$1,000. As early as 1857 Prof. Siemens, in Germany, first made a machine which it was thought might make liquid air, but it was not a success. Prof. Linde, of Germany, made the first successful machine in 1895. About the same time Prof. Hampson, in England, and Prof. Tripler, in America, were working on similar machines, and without knowledge of Prof. Linde's apparatus, perfected apparatus of their own which have since been improved until now it is said that liquid air can be produced in a large plant at a cost of 1 cent per gallon, and possibly at less.

Liquid air is produced by compressing air until 800 parts have been reduced to one part—800 cubic feet squeezed down to 1 cubic foot. In addition to compressing it has to be cooled. This is done by allowing a small portion of highly compressed air to suddenly expand in a tube that surrounds the tube in which the compressed air is confined. By repeating this process the air is made so cold that it finally liquefies at a temperature of 312 degrees below zero, Fahrenheit. In so compressing and cooling the air it was found necessary to first filter it, to take out all impurities and to dry it thoroughly, because any water left in it, and we all know that air contains considerable moisture, would freeze and the particles of ice would interfere with the process. So that liquid air is perfectly dry (although it looks just like water) and much purer than the air usually is. In his public experiments Prof. Tripler often spills some liquid air (accidentally, of course) upon some lady's rich fine gown and he greatly enjoys the look of consternation and the little scream—"Oh! you've ruined my dress." Mr. Tripler usually steps nearer as if to see, and says, "Where?" and then throws on some more. But, of course, no spots and no dampness can be seen, for the air is dry and evaporates the instant it is thrown.

Although so very cold it may be stirred with the finger safely. This is explained in the same way as a drop of water on a red-hot stove. Instead of instantly evaporating it will roll or dance around for a while. This is because owing to the difference in temperature a portion of the drop of water forms a vapor which prevents actual contact. The great difference in the temperature of the finger and

liquid air causes a film of vapor to form which momentarily prevents actual contact and hence injury. It is but a moment, however, and woe to him who leaves it in too long. On the same principle one may touch with a moist finger a very hot flatiron, but woe if he touches too long.

The most delicate rose dipped in liquid air will not change its color. But it is frozen so hard that its petals are brittle like glass and if dropped will break in innumerable fragments. The same with a head of lettuce and other vegetables. An egg becomes so hard that the yolk is like dust or the pollen of flowers. Butter becomes so brittle that it may be pounded into a fine powder in a mortar. Ice becomes milky and easily crumbles.

Uses of Liquid Air. It is not likely that liquid air can ever be used for power or for practical refrigeration; first, because its expansive power is not great enough—it can't do more than to regain its original state, *i. e.*, 1 foot to expand to 800—while water in the form of steam expands from 1 to 1,700. Second, because of its extreme cold, freezing everything with which it comes in contact. We can hardly realize what -312° means. One of its greatest uses, however, is in surgery, and it is now used in all the great hospitals of the world.

For Operations. Patients who cannot take anaesthetics can have the parts to be cut off, or cut out (like *e. g.*, cancers), sprayed with liquid air, which freezes them solid, when the surgeon can make a perfectly painless operation, and also perfectly bloodless. When the cutting has to be deep and where it formerly was impossible because the flow of arterial blood could not be controlled, it is now easily done by means of liquid air.

Consumption Cured. It is known that air consists of about 78 or 79 per cent. of nitrogen, and 20 or 21 per cent. of oxygen, with some carbonic acid gas and watery vapor. When liquid air evaporates, the nitrogen, being much more volatile, passes off first, so that after liquid air has been exposed for a time, the liquid remaining is very rich in oxygen. This rich liquid can be preserved much longer than the original, and can be used to enrich the air taken into the lungs of a consumptive patient. In fact, in the earlier stages of the disease, this is said to be an unfailing remedy and will, in a comparatively short period, effect a perfect cure.

Yellow Fever. Low temperature is the only thing known that will kill or render ineffective the germ of yellow fever. If a patient can be kept wrapped in ice, he usually recovers. But it is now claimed that if he is wrapped in blankets through which a can of liquid air is made to evaporate slowly, speedy recovery is almost absolutely certain, while the suffering and distress is immediately relieved.

Dyspepsia Cured. A Russian physician, experimenting with liquid air, placed a dog in a small room where the temperature was



LIQUID AIR.

This cut shows some of the marvels of the new discovery, LIQUID AIR. It looks like water, but is as dry as dust. It is so intensely cold that it will cause ice to form in a blazing fire, and yet if a steel pen is held over it, and lighted with a match, the pen will burn like tinder. A tin dipper held in it for a few minutes becomes so brittle that it will break like thin glass. Cancers sprayed with it can be cut out without the least pain. A human body can be cremated with it completely in fifteen minutes. The following chapter explains how it is made, its various uses, etc.

gradually reduced to 100° below zero. After ten hours the dog was taken out alive, but ravenously hungry. Then the doctor, who suffered horribly from dyspepsia, tried it on himself. After ten hours' confinement in the still, dry, cold of evaporating liquid air, he found himself wonderfully stimulated. Continuing the experiments, the results were truly marvelous. Both man and dog grew fat and developed not only splendid appetites, but were able to digest their meals without the slightest discomfort.

Other Uses. Liquid air may also be used successfully in deep sea diving; or for aerial navigation; submarine navigation; as a freezing mixture around shafts or tunnels or when digging through quicksand; or in blasting; for making vacuum bulbs like the incandescent electric lamp, and for scientific experiments and investigation. It may possibly become extremely useful as an aid in burning poor, cheap fuels. But to these and kindred objects its use is limited, and to invest money in liquid-air-making companies would be a dangerous experiment, if one expected any financial returns.

WONDERS OF LIQUID AIR.

The experiments made with liquid air are so marvelous that it is not to be wondered at, that those who have not witnessed the experiments refuse to believe them. Possibly the most striking experiment is this: A quantity of liquid air is poured into an ordinary tea kettle and the kettle is set over a hot fire of coals. The liquid air boils and shoots in streams from the spout of the kettle, three or four feet high. If, then, a glass of water is poured into the kettle the water will be frozen in a few moments and the pieces of ice appear boiling about in the liquid. If, however, the kettle is lifted off the burning coals its under surface is found to be covered with frozen carbonic acid from the fire and moisture from the room. Within an inch or so of the burning coals ice had formed on the bottom (outside) of the kettle. It is so marvelous that one can scarce believe his eyesight. Yet it is true, as can be testified by many who have seen it.

Another pretty experiment is shown in Fig. 7, where a rubber ball is shown floating in a tumbler of liquid air. The vapor from the liquid air flows over the edge of the glass not rising like steam, but is easily mistaken for steam. The chill which the hand receives, however, if exposed to it, quickly convinces one to the contrary. When the rubber ball has been in long enough to get as cold as the liquid and is then taken out, it will be found as brittle as glass, and if thrown against the wall, will shatter like a thin glass tumbler.

Fig. 3 shows an ordinary tin pan or dipper, which had been immersed for a short time in liquid air. When struck against a table or any hard surface it is shattered like glass, as may be seen. Copper, on the contrary, is not affected by it. Fig. 6 shows a sponge saturated with liquid air, after most of the nitrogen has evaporated. When

touched with a lighted match on the end of a long rod the sponge explodes with violence and is torn to shreds.

Iron and steel become brittle as glass. Gold, silver, copper and aluminum are not affected. Lead becomes stiff and elastic like steel. Mercury becomes solid, like iron. Ivory, cooled in liquid air, and then held in a strong light, is seen to glow with a bright phosphorescence.

The anomaly of burning a steel pen in this very cold liquid is shown in Fig. 2. This shows a tumbler with liquid air about one-half evaporated and hence, rich in oxygen. If, now, an ordinary steel pen or a watch spring is held in the liquid and touched with a lighted match, the steel burns with the brilliancy of an electric arc. In the early experiments at preserving liquid air, a glass bulb was used, around which a large bulb had been blown (See Fig. 8) and the air exhausted from the space between. The liquid lies quietly in such a bulb without boiling. In an ordinary bulb (Fig. 9) it boils constantly while the outside of the bulb is quickly covered with ice—the frozen moisture from the air. An entire volume could be written on the marvels of this fluid, which sooner or later is destined to hold a prominent place in the economy of human existence.

Value of Liquid Air Gases. Prof. Raoul Pictet, the Swiss scientist, claimed that with a comparatively simple apparatus he could dissociate or separate the constituent gases of liquid air so that with a 500 horse-power steam engine at a total cost of \$74 per day he could make and separate enough liquid air to obtain daily 3,550,000 cubic feet of oxygen, 5,300,000 cubic feet of nitrogen and 3,000 pounds of carbonic acid, and that the present total value of all these gases was over \$1,500.

HOME MADE ICE.

Ice Made With Chemicals. Ice can always be purchased cheaper than it can be produced in a small way, but sometimes it is desirable to secure extreme cold or to make ice when it is inconvenient, or when there is no time to go to the places where ice may be purchased. In such cases ice can be made in a suitable vessel by the use of nine parts of sodium phosphate and four parts of dilute nitric acid, or by equal parts of ammonium nitrate and water. A stronger mixture is the following:

Phosphate of soda.....	9 parts
Nitrate of ammonia.....	6 “
Dilute nitric acid.....	4 “

By means of this solution it is possible to reduce the temperature from 50 ° Fahrenheit to 21 ° Fahrenheit.

To freeze water by either of these mixtures, one only needs a small dish, the narrower the better (it should not be over two inches wide) to hold the water to be frozen and a larger dish fitting more or less



HOW TO MAKE ICE IN FIFTEEN MINUTES.

This can be done in the kitchen at but little above the ordinary cost of ice.

A few pounds of ice at the critical time will often save life.

Dr. Winthrop truly said that many hundred patients, especially children, die every summer for want of a little ice at the proper time
See page 764.



The kind of apples that are healthful and may be eaten (raw or cooked) with perfect safety. Page 14.



The kind of apples that are very unwholesome and should always go into the garbage heap.

PULP IN APPLES.—Some apples contain pulp which is very injurious. Many cases of sickness and disorder, seldom suspected, originate from it. Swallow only the juice of such apples. Note this fact, as it will be of great value to you. Read page 14.

closely around the smaller dish to hold the freezing mixture. The principle is the same as in any ice cream freezer. It is best to use for freezing, water that has been boiled and allowed to settle. The water and the vessels should first be made as cool as possible in the coldest water available—in the well or wherever convenient.

It will require from two to four times as much (by weight) of the chemical as of the ice desired. A pound of ice will require from two to four pounds of the mixture, but the chemical may be used over and over again, by simply evaporating the water. If a large piece of ice is wanted or the ice is to be frozen sooner than otherwise, provision must be made for lifting the small can containing the water to be frozen out of the surrounding mixture and immediately placing it in a fresh mixture. It may be necessary to repeat this a third or even a fourth time, to hasten the freezing. The outer vessel should be insulated by wrapping it about with blankets or comforters, or by numerous thicknesses of paper.

Water at 32° Fahrenheit will freeze, but not at once. No matter what the outside temperature, the temperature of water will respond proportionately until a temperature of 32° Fahrenheit is reached. Then a thermometer in the water will show no further decline, neither will the formation of ice begin, until the latent heat has been absorbed. This factor, of course, must also be taken into consideration when making ice by means of chemical salts. The latent heat of ice amounts to 142.5 thermal units, a thermal unit being the amount of heat necessary to raise a pound of water, one degree, Fahrenheit.

THE APPLE.

THE JAPANESE FOUNTAIN OF ETERNAL YOUTH AND BEAUTY.

The apple, the food of the gods, the mainstay of life in Eden, the most luscious, the most precious, most health-giving food on earth. No wonder poets in all ages have sung its praises. It is the most universal fruit, being found throughout the temperate zone of all countries of the globe.

The secret of its power lies in the malic acid and the picric acid it contains. The malic acid, which no chemist has been able to reproduce, has a marvelous power of awakening to healthful activity all those secretions of the body that tend to cleanse the entire system, hence its great value in many diseases, and in preventing diseases.

Obtaining Beauty of Face by Means of the Apple.—It is recorded that Cleopatra, of Egypt, the most renowned beauty of ancient

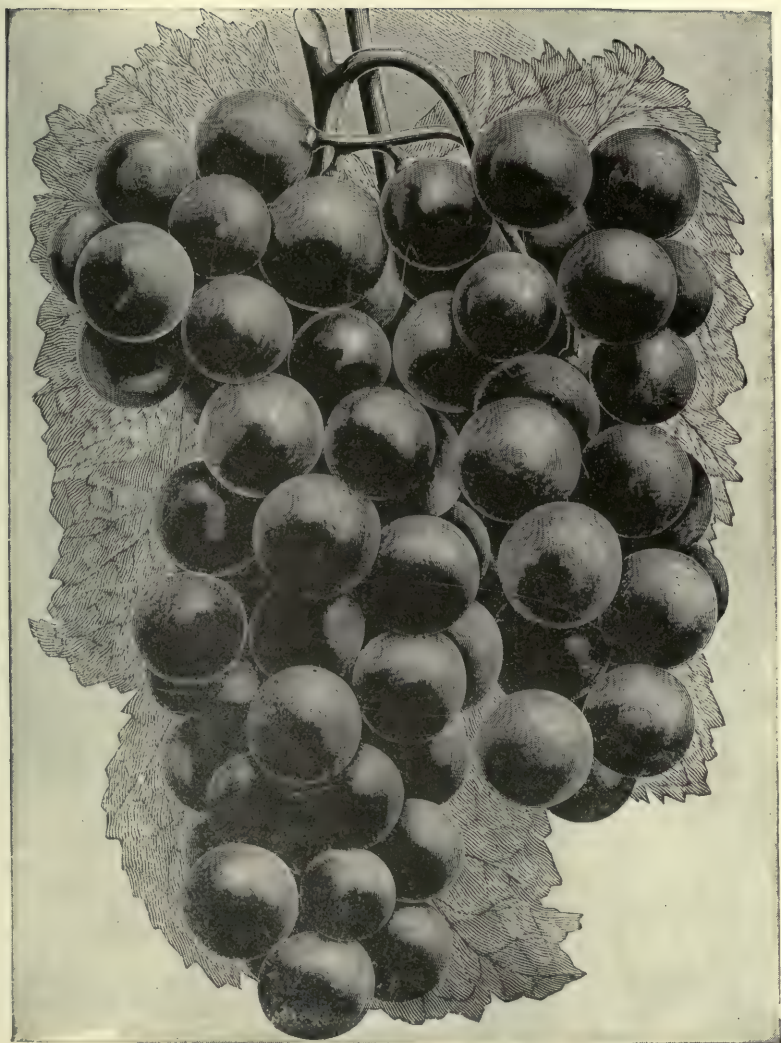
times, asked at the temple of the Gods what she should do to obtain beauty of face. The high priest declared it to be the will of the gods that she should breakfast exclusively on raw ripe apples. This she did and became more beautiful every day so long as she continued the practice. The old priest *did* declare the wisdom of the gods, for we now know that the apple, persistently and wisely used, if taken at the beginning, will cure constipation and other afflictions, and their cure will result in beauty of face.

Apples, How to Eat. Apples, one of the most common and most healthful of all fruits, often become almost a poison to many people merely because they neither know how to select suitable fruit nor how to eat it when selected. Dr. Sawyer, of Baltimore, Maryland, who has spent much time in the study of the effects of the apple upon the human organism, says that he has found hundreds of people who told him they would not dare eat a raw apple; it would make them sick. But after he showed them that by chewing all the virtue out of the pulp and then discarding it, they could enjoy eating apples as well as anyone, they had no further trouble.

Apples, How to Select. Apples for eating should first of all be fully ripe, without being over-ripe, and be ripened *on the tree*. The practice of picking apples green and keeping them till they slowly ripen (rot) is a most iniquitous one. After an apple begins to decay, even though but a small piece of "rot" shows, it is no more fit to eat raw, for the ptomaine poison of the rot has been absorbed partly by balance of the apple. Again, many apples are very full of woody fibre or pulp. All these when eaten raw should be simply chewed and the pulp rejected. In selecting apples for eating, therefore, it is best to select those which have the least pulp and the most juice. They should be fully ripe and full grown. All other apples should be sent to the cider mill or baked or stewed or otherwise thrown on the garbage heap.

Grapes. Grapes, when ripe and wholesome, are plump and firmly attached to the little stems. They are unwholesome if at the *point of attachment to the stems they have become loose and, particularly, if there is a slight discoloration apparent on the grape at this point, or if it has become at all soft*. In either one of these cases it should be rejected as unfit for use.

Grapes are among the most wholesome and most nutritious of fruits. In the archives of the British War Department is the report of Col. McWade, whose corps in India was at one time obliged to subsist for two weeks on grapes alone. It developed that the soldiers stood this diet very well, but after a couple of days all the officers were sick with diarrhoea and indigestion. An official inquiry proved that the officers discarded the skins and seeds of the grapes, while the soldiers ate the whole grape. An order was thereupon promulgated that the officers should eat the grapes entire—skins and all—when they soon recovered, and continued well until food could be provided.



THE WHOLESOME GRAPE.

How to tell the wholesome grape at a glance is told on page 14.

The British Government Reports tell how a regiment of soldiers in India lived for weeks on grapes alone. The soldiers swallowed the grapes, skins and all and kept well, while the officers, who discarded the skins and seeds, grew sick. When the officers were ordered to eat the entire grape, all kept well.



GRAPES.

This is an unwholesome grape and should not be eaten under any circumstances. See page 14.

No wonder mankind is afflicted with 150 diseases, for their stomachs are made the dumping ground for so much chat is injurious. So long as people persist in the idiotic course of having all sorts of food on their table, except the most healthful food—cooked or uncooked fruit, they may expect to be the victims of the multitude of diseases that afflict mankind

Wholesome fruit must be carefully selected. To be able to distinguish readily between fruit that is wholesome and healthgiving and fruit that only does injury to the system, is what is everyone's right and duty to discover. Fruit that is ripe is always good. Fruit that is unripe is usually bad. Fruit that has begun to decay is injurious and usually dangerous. It is easy enough to discover the beginnings of decay on apples, pears, peaches, etc. Decay immediately generates ptomaine poisons, and this is almost immediately communicated to the entire piece of fruit. It is no safety to cut off the rotten portion, for all the balance is affected.

POISON IN OUR FOOD.

EXTRACTED FROM UNITED STATES PURE FOOD INVESTIGATING COMMITTEE
AND OTHER REPORTS.

An eminent French chemist wrote a book not long ago in which he made a forecast of the time when human beings would cease eating meat or vegetables, and would take all their foods in the shape of compact chemical tablets of diverse flavors. It is possible that the day may come when chemists will be able to manufacture nutritious and wholesome food out of the elements; but if we are to judge the future by the present, it is to be hoped that the era of chemical food may be postponed indefinitely. It has long been known that a very large percentage of our food is more or less adulterated with substances that can be made to resemble it in appearance and flavor, and which are often harmless. If they were all innocuous, the question would be merely one of commercial honesty, competition, and price. But many of them are injurious to health, and therefore call for more vigorous measures.

As early as 1820, attention was called in England to the dangers of adulterated food through Accum's treatise, "Death in the Pot." In 1851, The Lancet declared war against dishonest manufacturers, printing every week a list of culprits, with chemical analyses of their products; and continued this for three years. Repeated legislative enactment since that time has given the English considerable protection, but that it is still far from complete may be inferred from an article in The Lancet of April 22, 1900, on "Meat Extract of Vile Origin," which shows that such extracts are occasionally made of putrid liver and offal. "It might be thought impossible," it remarks, "that such filthy material could be fabricated into a toothsome paste, but so it is, the use of deodorizers and subtle flavoring materials having been placed at the disposal of offal-mongers by the advances (alas, that it must be so confessed) of chemical knowledge. . . . Of course, cooking would destroy most noxious germs, but their products, the poisonous ptomaines, would remain. . . . Their presence in an extract would cause very serious symptoms of poisoning."

In this country many State legislatures have enacted laws making injurious food adulterations illegal, and Congress has set aside an

annual appropriation for use in investigating such adulterations, partly for the sake of protecting honest producers. The proceedings of the War Investigating Committee have resulted in a fiasco for the government, but they have at least done good in calling the nation's attention in a sensational way to this subject of "Death in the Pot." By a fortunate coincidence, official reports regarding the alarming extent of food adulteration and poisoning have been recently prepared in several States, and the result is that the press all over the country is discussing this matter.

In Pennsylvania the Food and Dairy Commissioner, Levi Wells, has ascertained that chemical companies have had agents traveling regularly in the State to sell to butchers chemicals for preserving meats, the favorite being apparently boracic acid, which "is certainly deleterious to health." The packages are labeled, telling how the chemicals are to be used on meat. In Connecticut the Agricultural Experiment Station issued on May 1 its annual report on the adulteration of foods. It gives a summary of the extent to which frauds are practiced on consumers, thanks to Yankee ingenuity, combined with modern advances in chemistry. Of sixty-three samples of fruit jellies, two-thirds were adulterated, not only with starch and glucose, but with aniline dye and poisonous salicylic acid. Out of forty samples of marmalades and jams only three were pure. Of forty-seven samples of beer and ale, twelve contained salicylic acid, and nineteen samples of sausages and oysters were found "embalmed" by boric acid.

"The use of antiseptic as preservatives of food is becoming alarmingly great," says Prof. Mitchell, analytical chemist of the Wisconsin Dairy and Food Commission. Farmers mix them with milk and butter, and they act disastrously on the tissues of the stomach. Nearly every butcher in Illinois, he says, makes use, especially in the preparation of "Hamburger steak," of preserving chemicals, including sulphide of soda, a compound which checks fermentation, and therefore makes it difficult to digest the meat. A government expert has testified that this chemical had been used by medical students to preserve cadavers, and by physicians to disinfect houses where there had been smallpox. At the recent sessions of the United States Pure Food Investigating Committee in Chicago, the testimony of several other experts was taken, all of whom agreed that the antiseptic chemicals so freely used in the preservation of food and drink are deleterious, and in many cases poisonous. Dr. Wiley, chemist to the National Agricultural Department, declared, among other things, that no food which contains preservatives is fit to eat, and that probably the one most commonly used, because of its cheapness, is salicylic acid, which should be forbidden because it is very bad for the health, especially in the case of weak stomachs. A pamphlet published by the Department of Agriculture at Washington states that "the use of salicylic acid as a food preservative has been forbidden by several European governments." Here it is used to a large extent, both by native canners and by foreigners who take advantage of our situation. The department



ONE OF MANY LARGE FACTORIES AT
NEW YORK MANUFACTURING FOOD
ADULTERATIONS.

ADULTERATION OF FOOD.

(From United States Pure Food Investigating Committee's Report.)

**THE GERMS OF DISEASE AND DEATH ARE IN
MANY ARTICLES OF OUR FOOD.**

What should be done is told on page 17.

Innumerable cases of sickness and premature deaths caused by poison germs put in our food in the shape of preservatives and adulterations.



GREATEST SOURCE OF CONTAGIOUS DISEASES IN THE WORLD.

How to escape catching consumption, diphtheria, scarlet fever, pneumonia and other contagious diseases. See page 23.

found it in fifteen out of twenty samples of string beans, in ten out of twelve samples of baked beans, in twenty-four out of forty-one cases of corn, and so on.

This testimony from so many expert and unbiased sources, fully justifies the heading given to our article. The chemicals used to preserve our food and drink have become a serious menace to health. There are thousands of invalids whose chances of recovery and life depend on their getting the purest drugs and food, and there can be no doubt that some of these are killed every day by the poisons in milk, butter, and meat, put there by farmers, grocers, and butchers to save trouble or avoid the risk of goods spoiling on their hands. To perfectly robust individuals these chemicals may be comparatively harmless, but Americans are a nation of dyspeptics, and salicylic acid, the favorite preservative used here, has been pronounced by the Paris Academy of Medicine especially injurious to dyspeptics. Their life is made wretched by the systematic food poisoning for the profit of dishonest dealers; salts of zinc or copper in a dish of canned peas, for example (put there to give them a pretty green color!), may result in a sleepless night, colic, headache, loss of a day's work, and general misery; and this may go on indefinitely, rendering life a burden, without any suspicion in the victim of the real cause. Last summer a Western hotel lost hundreds of guests, who left, one after the other, because they all became ill for some mysterious reason. The water and ice were held responsible, but careful experiment showed that the illness was due to the use in the kitchen of cheap coal-tar flavoring extracts. In saving \$10 by buying this stuff the proprietor of the hotel lost \$10,000. These coal-tar extracts are used to a very great extent in confectionery, ice cream, soda water, etc., and to many persons they are poisonous. They deserve a special investigation.

DISEASES SPREAD BY SALIVA.

Among recent discoveries in medical science there are none more important or far-reaching than those which have to do with the prevention of contagion from ordinary diseases like la grippe, consumption, influenza, pneumonia as well as diphtheria, scarlet fever, etc.

Hermann Koniger, the renowned German physicist, in a series of experiments conducted during the early spring and summer months of the year 1900, proved conclusively that the germs of disease, even before the disease has developed so as to be recognized, are expelled in droplets of saliva in the act of speaking or of coughing or sneezing. In a room where there is no current of air, a person could thus scatter germs to a distance of more than twenty-two feet, and to a height of more than six feet. They are even found behind the person who speaks or coughs. Ordinarily, however, they are not thrown more than a few feet from the person. They are not scattered in ordinary expiration without effort, nor in the pronunciation of vowels. It is scarcely noticeable in persons who speak in a low tone, but

excessive in those who stammer. It is very different in different individuals.

In the experiments, M. Koniger found that within an hour all the germs had become deposited, most of them within ten minutes or so. Before that the germs, or bacilli, were found to be held suspended in minute droplets or globules of saliva too small to be seen without the aid of the microscope. The larger bacilli, such as those of tuberculosis (consumption), are carried a smaller distance and fall to the ground sooner than the lesser bacilli, such as those of influenza or pneumonia, etc., and hence contagion from the latter is the more to be feared and guarded against. He found that the simple act of placing a handkerchief before the mouth in the case of tuberculosis was sufficient to prevent the emission of saliva droplets charged with bacilli, but in the case of pneumonia it was necessary to wear a mask made of fine wool gauze over the face in order to prevent the dissemination.

During a surgical operation, said M. Koniger, no one should ever speak.

It is well known that disease germs often, even in well persons, lodge in the mucus of the mouth and throat. Repeated chemical analyses, made at the laboratories of any of our leading hospitals, of saliva from the mouths of persons having a slight sore throat or a little cold, and otherwise perfectly well, showed the presence of abundant active diphtheria bacilli, and, in some who had developed but a slight cough, the germs of the dreaded pneumonia. It is now recognized that in such cases, while the persons themselves may not develop the disease at all from the presence in the mucus of their throats of these bacilli, yet they are capable of giving the contagion to others who may be at that time in a condition of susceptibility.

The health boards of nearly all large cities have found it necessary from time to time to warn the public against spitting in public places, because they had found that the mucus thrown from the throat in the act of expectoration, when dried, consisted in active and more or less dangerous colonies of disease microbes, and that numerous serious diseases were directly traceable to this cause. In short, it is now claimed that this is the greatest cause in the world for the spread of contagious diseases.

Expectoration should always be into a moist place or into water. In that case the bacilli cannot rise into the air to be drawn in by the breath and perhaps lodge in the passage of the nose or throat and start a "germ culture" which later develops into a disease.

M. Koniger found that frequent washing of the mouth or gargling greatly diminished the number of bacilli susceptible of being detached, and thus washing and gargling have a value in contagious diseases. He found that in most cases the habit of always holding a handkerchief before the mouth when coughing or sneezing greatly diminished the liability to disseminate germs or spread contagion. This is especially true of ordinary coughs and colds, of pneumonia, diphtheria and other kindred diseases. As the result of his experiment

M. Koniger strongly urged the necessity of being on our guard against the influence of the minute droplets of saliva carrying bacilli which are expelled from the mouth in the act of coughing or sneezing, or in vigorous explosive speech.

A Chicago health officer maintains that we have just as good a right and duty to guard against the contagion caused by promiscuous spitting, coughing and sneezing in public places as we have to guard against contagion by prohibiting the slaughter and sale of tuberculous cattle for food.

In small-pox and some other diseases in which the danger of contagion is universally recognized, society has guarded against contagion by immediate and complete isolation of the patient, but in consumption, pneumonia, influenza, grip and various other diseases the contagious nature has not been fully realized and hence where we now have one case of small-pox we have many thousands of either of the other mentioned, although the time was when small-pox was more prevalent than any of the others.

HOW TO ESCAPE CONTAGIOUS DISEASES.

J. J. Richardson, M. D., in a treatise on this subject, says that when any member of a family is attacked with scarlet fever, diphtheria or any contagious disease, it may be generally prevented from extending by attention to the following rules:

Have the patient placed in one of the upper rooms of the house or at least the farthest removed from the rest of the family, where the best ventilation is to be had. The apartments should be at once cleared of all curtains, carpets, woolen goods and unnecessary furniture. Fill a cuspidor or spittoon with chloride of lime or a strong carbolic solution (a teaspoonful of carbolic acid to one-half pint of water). A large tub containing carbolic acid solution (four fluid-ounces to each gallon of water) should stand in the room for the reception of bed or body linen immediately after it has been removed from contact with the patient. The nurse should wear in the chamber a loose gown and tight-fitting cap, to be thrown off at the door, and the hands should be washed before going out, with carbolic acid water. Napkins should not be used, but in their stead pieces of rags, which can be burned. Glasses, cups, dishes, etc., must be scrupulously cleaned in a carbolic acid solution or in boiling water before they are carried away from the room. All discharges from the bowels and kidneys are to be received into vessels containing some disinfectant, such as a solution of two pounds of green vitriol to a gallon of water, or the carbolic solution, and immediately removed. A sheet, kept moistened with a strong carbolic acid solution, should be hung over the door outside, for the purpose of catching any germs of the disease which might otherwise escape.

Boiling is the surest way of disinfecting contaminated clothing, or it may be baked in an oven heated to about 240° Fahrenheit. After

the disease is over, the patient should be kept isolated for ten days after all the scabs fall off in smallpox, or after desquamation (that is, "peeling" of the skin) is complete in scarlet fever. For the last week of his seclusion, daily baths, each containing one ounce of strong carbolic acid, should be given, and every square inch of the body must be thus carefully disinfected, especially the scalp, as the disease poison is apt to linger among the dandruff at the roots of the hair.

To purify the apartment, wash the furniture, woodwork, floor and walls (scraping off the paper) with the carbolic acid solution and soap. Then shut up tightly and burn in it a pound of sulphur for every hundred cubic feet of space it contains and allow the fumes to remain in the closed room for twenty-four hours. Lastly, open doors and windows so as to ventilate freely for a week, at the end of which time disinfection may generally be considered complete.

TO AVOID CATCHING DIPHTHERIA.

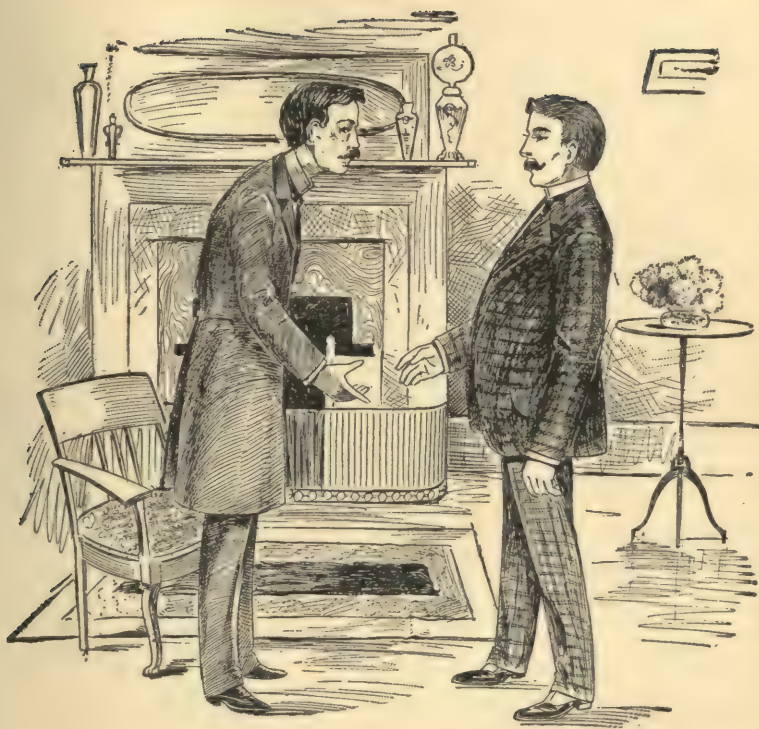
No. 1. A pan of raw sliced onions placed in a room where there is diphtheria will absorb the poison and prevent the disease from spreading. The onions should be burned or buried every morning and new ones used.

No. 2. To 1 drachm of Monsel's salt, add 3 ounces of water; add sufficient sugar to overcome the taste of the iron. Dose:—One teaspoonful three times a day. When exposure to the contagion has been of daily occurrence, give every three hours. For a child, see table of doses for children, p. 611, Vol. II. Dr. Bennett writes that in 130 cases of exposure to this disease, not one took it who had used this remedy.

HEALTH IN BREATHING.

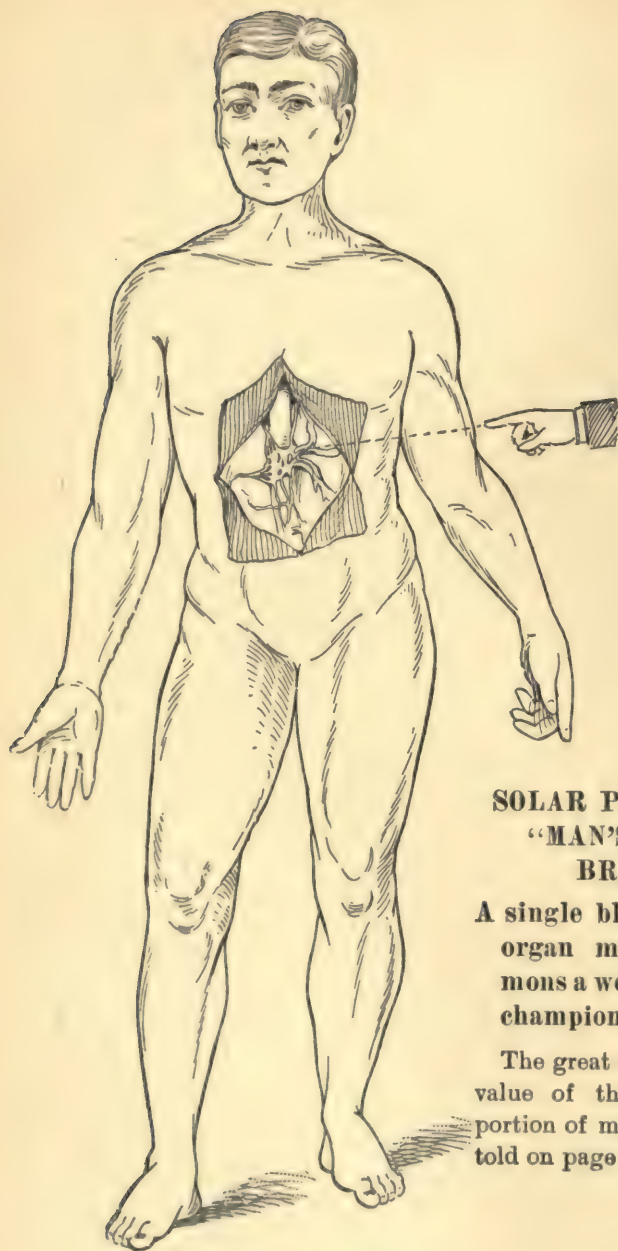
Deep Breathing. Many cases of lung trouble and of other afflictions are due to improper breathing, or rather to persons allowing themselves to fall into bad habits of breathing. Nature intends that a certain amount of oxygen must come from the air we breathe. In a natural, joyous life, nature will cause anyone to breathe in an abundance of this oxygen. But artificial habits of life, and especially despondency and work that requires much stooping or bending over, are apt to produce an apathy of the nerves and muscles that control breathing, and hence an insufficient supply of the health-giving oxygen. The remedy in such cases is easy and in everyone's hands. Moreover, it costs nothing but a slight effort, continued long enough until a correct habit is formed.

How to Breathe. The most important item in breathing is that it shall be deep and rhythmic, that is, that inspiration and expiration shall be of equal length. Watch a person asleep and note his breathing: it is as regular and rhythmic as the swish of the waves on the shore, as regular as the ticking of the clock. That is the natural



HOW DEEP BREATHING SAVES LIFE.

The proper method of deep breathing has restored many persons to good health. And life is frequently saved by it. See page 24



**SOLAR PLEXUS, OR
"MAN'S THIRD
BRAIN."**

A single blow over this organ made Fitzsimmons a world-renowned champion.

The great importance and value of this little-known portion of man's anatomy is told on page 27.

way; when consciousness stops controlling it, the breathing becomes natural. If, then, you are seeking health and vigor, imitate the natural.

Breathing Exercise. Of marvelous value is the deep breathing exercise, which should be taken just as regular as the morning ablution. The best place is somewhere where one can get fresh air, preferably air that the sun has shone on. Then bending back the shoulders, throwing forward the chest and upward the chin, inhale slowly just as much air as the lungs will hold. Hold in this air while you count ten. Exhale it slowly. Repeat this four or five times. Then, after a moment's rest, empty the lungs to the utmost, then draw in all the air possible, and when the lungs seem full, draw in just a little more, pack the lungs, as it were, and hold the breath while you count twenty slowly. Then exhale. You will find this a wonderfully invigorating and health preserving exercise.

SOLAR PLEXUS.

The solar plexus, frequently mentioned in the daily press, because some years since a notorious champion prize fighter was defeated by a blow over the region of this mass of nerves, is a great ganglionic network of nerves and cells, situated just behind the stomach in front of the main artery (known as the aorta) and of the fold of the diaphragm. A number of lesser nervous ganglia branch off from it, ten in all, viz.: the phrenic, coeliac, gastric, hepatic, splenic, renal, suprarenal, superior mesenteric, spermatic and inferior mesenteric or epigastric plexus. The special function of this mass or network of nerve cells is not definitely known, but it is known that any injury to it, such as a severe blow, will completely paralyze the victim, while any serious disease affecting the solar plexus proves fatal.

A physician in Cincinnati, in a treatise on this subject, maintains that the solar plexus is the "third brain" of man, the complete brain consisting of three parts, the cerebrum, cerebellum and solar plexus. The latter acts as a brain whenever from any cause the other brain is incapacitated by sickness or accident, but is not subject to the control of the will. He cited the case of an infant which lived for six months and yet when at the autopsy its skull was opened, it was found to contain nothing but serum; it had no brain, while its solar plexus was unusually well developed. Another infant which died soon after birth, yet cried lustily, was found to be entirely devoid of brain. From these and other phenomena he developed the third brain theory and supported it with many plausible reasons and pertinent facts. There may be no special value in these discoveries, so far as known at present, except that it should make us more careful to guard against blows in the region of the stomach or just above the belt.

DIVISION SECOND.

XXTH CENTURY HEALING.

SUGGESTIVE HYPNOTISM, PALMISTRY, MIND CURE CHRISTIAN SCIENCE, ETC.

BY DR. L. F. JORDAN.

MENTAL THERAPEUTICS.

The phenomena of animal magnetism, mesmerism or hypnotism were discovered by a doctor of Vienna, Austria, named Mesmer about the year 1770. He employed the natural powers given him in the healing of disease, and for many years practiced with great success at Paris, France, where he became very popular. After his death, however, the whole matter was abandoned, largely because a committee of special scientists, who had investigated the phenomena, reported that there was nothing wonderful about the things done, and that they could all be produced in the patients by "suggestion." The public, who had looked upon it as a supernatural power, were disappointed and refused to entertain what was now considered a fraud, while the doctors abandoned it because the then newly discovered anesthetic, chloroform, took up all their attention.

It was only in recent years that the subject was again investigated, and the Academie Royale de Medecine, at Paris, declared that a new field was opened to physiological science. A committee of the Royal Society testified that they had seen persons who, while in the hypnotic sleep, could unerringly diagnose medical and surgical cases that baffled the best physicians, and correctly foretell the result of the disease.

In 1842, at the Royal Medical and Chirurgical Society of London, the account was read of a patient who had suffered for five years with a disease of the left knee, so that the slightest motion of the joint caused extreme pain. He was mesmerized or hypnotized by Mr. W. Topham and operated upon by W. Squire Ward, surgeon, who performed an amputation of the thigh. During the operation, which lasted twenty minutes, the patient looked on calmly, showing absolutely no evidence of pain, although perfectly conscious. He recovered perfectly and no bad symptoms whatever, followed.

In 1898, Willie McCabe, 4 years old, of 532 East 76th street, New York, having received a bicycle, spent an entire day in struggling to ride it, meeting with numerous falls. At night he went to bed feverish, and next morning had violent convulsions. After medi-

cal examination he was taken in an ambulance to Bellevue Hospital. The doctor gave the suffering lad morphine, but the drug had no effect. Dr. Carey, the chief of the medical staff, decided to try hypnotism.

"Willie! Willie!" he shouted, "now watch my fingers." The doctor kept him looking at the fingers, held close to the boy's face, for five minutes. Then the doctor lowered his fingers and said: "Now, Willie, all your pain is gone and you will be able in a moment to ride your bicycle."

The effect of the suggestion was marvelous. The tense muscles began to relax, the boy straightened out while a smile broke over his face that had before been drawn as if with torture.

"Now, Willie," said the doctor, "it is time to go to sleep." In a few moments the boy was sound asleep. In ten minutes he had been cured of convulsions, which, by any other means, would have kept him ill and in pain for weeks. Scores of similar and some much more remarkable cases could be given.

One of the most marvelous evidences of the control over the body, and especially the muscular system, is shown in the experiments on rigidity, *i. e.*, making the body rigid. Prof. de Laurence states that by simply making passes along the arms and limbs of Miss —, a slender and tall young lady of small physical power, while she was standing erect, by merely suggesting to her that she was now perfectly rigid, like a stone image, caused her to become so stiff that when, at the professor's request, she was placed with her head on one chair and her feet upon another, three young ladies, whose combined weight was over 400 pounds, stood upright upon her prostrate form without so much as bending it in the least. When conscious, it would have been utterly impossible for her to have supported the weight of even one person. This same experiment has been many times performed with different people, and with equal success. Of course, this rigid state cannot be produced in every person, simply because there is a limit to the hypnotiser's power over others, but it has been done often enough to prove beyond doubt that the power exists. It goes to prove also that through hypnotic suggestion, the organs of the body can be made to do things otherwise impossible. In other words, the ill-adjusted and the sickly can thus both be healed.

Hypnotism. The term hypnotism, from a greek word signifying sleep, was first introduced by Dr. Braid of Manchester, England, who discovered that by placing a bright object before the eyes of a person and causing him to gaze intently upon it for some time, he could be thrown into an apparent sleep during which he would act out whatever suggestion was made to him by the doctor's mind.

The truly wonderful antics of persons while in this hypnotic state, and the marvelous powers often shown by them, have been so many times exhibited, both publicly and privately, that they are more or less familiar to everybody, and no intelligent scientific student in the world to-day will deny the extraordinary human powers demon-

strated by these hypnotic experiments. Prof. Carpenter for many years gave public exhibitions in many cities and towns, where he would hypnotize well known local residents and then make them believe, for instance, that it was very cold. Their shivering and coat-buttoning was ludicrous enough. But when he suggested to the subject that he go warm himself at yonder stove, at the same time pointing out some young lady friend, perchance the subject's best girl, and to watch him warm his hands and turn to warm his back exactly as if she were a "hot stove" on a very cold day, always convulsed the audience with laughter. Another favorite suggestion, often made to some slender and delicate young fellow, was that some buxom lady in the audience was an infant needing to be taken up and soothed. The result can better be imagined than described. The marvelous feature about the case was the ease with which the weak young man could handle a weight that would have staggered him had he been conscious. Another popular trick was to make some extremely modest and retiring young man imagine himself to be a great orator addressing a throng. His confidence, his gestures and his good language would have been absolutely impossible if he had not been in the hypnotic trance.

How to Hypnotize. The first essential is the concentration of mind, a power natural to some, but which can be acquired by persistent practice by almost everyone. The hypnotizer must have a dominant thought of mastery over his subject and concentrate his *whole* mind on that thought. Then by holding some bright object, or even simply his fingers directly before and a little above the subject's eyes, repeatedly bidding him to gaze intently at the object presented, until he sees the pupil dilate and a glassy appearance come into the eye, he can then say, "Now, sir, shut your eyes. You can't open them any more," and the subject is hypnotized and will act upon most suggestions made.

The Nancy Method. H. Bernheim, M. D., professor at the great medical school at Nancy, France, and a firm believer in hypnotism, gives the following as his method of hypnotizing. I first disabuse the patient's mind of any idea of magnetism and explain that there is nothing hurtful or strange about it. When I have thus banished fear from his mind, I say, "Look at me and think of nothing but sleep. Your eyelids begin to feel heavy. Your eyes are tired. They begin to wink. They are getting moist. You cannot see distinctly. They are closed." Some patients close their eyes and are asleep immediately. With others I have to repeat, lay more stress on what I say and even make gestures. I hold two fingers before the patient's eyes and ask him to look at them or pass both hands before his eyes, or persuade him to fasten his eyes upon mine, at the same time endeavoring to concentrate his attention upon the idea of sleep. Then I repeat as before and say finally in a commanding tone "sleep!" Some are rebellious. I command them to be calm. I speak continuously. I speak only of drowsiness, of sleepiness. "That is



SUGGESTIVE HYFNOTISM.

The science applied to the cure of disease.
See page 28.

Methods of hypnotizing. See page 30.

How such wonderful feats as the above can be performed is explained on page 30.

sufficient" I say finally, to gain a result. I may have to repeat the words given above though this is usually effective.

It is not true that the person hypnotized becomes the slave or is completely in the power of the hypnotizer. The oft repeated statement that the subject loses all power of control so that if he be ordered to commit a crime he must do so, is not well substantiated. The moral nature of the subject has never yet been successfully controlled by hypnosis. The stories told on this subject are not well authenticated. The hypnotized subject, however, usually continues amenable to suggestion until with a clap of the hands he is ordered to awaken, when he does so as if from sleep. He may be put to sleep with instruction to awaken at some hour in the future. He will immediately pass into a sound slumber, but will awaken and be normal at the hour specified.

Scoff at Hypnotism. It is still popular in many quarters to scoff at hypnotism. But no modern scientist who has investigated its wonders, scoffs, nor indeed doubts, any longer. The evidences of its power are too plentiful and too well authenticated to deny its supreme usefulness as an aid to medical skill and to allay suffering, and we are just beginning to discover its practical application in mitigating the sum total of *human* ills.

Healing by Mental Suggestion. Prof. Thomson J. Hudson, of Boston, author of "The Laws of Psychic Phenomena," and other books, relates the case of a man who had suffered for years with inflammatory rheumatism and nervous attacks, his sufferings being so intense that one of his hips had been drawn out of joint, leaving one leg some two inches shorter than the other. Through friends it was decided to treat him by mental treatment administered during sleep. The treatment began May 15, 1890. Only two friends knew of the proposed experiments, and they were requested to note the time when the experiments began. Some months later one of these two met the invalid and was surprised to find him well. Asked when he began to improve, he answered, "About the middle of May." After that he has remained well and been able to attend to his business of journalism. "Were this a single instance," Prof. Hudson adds, "it might be considered a mere coincidence. But more than a hundred experiments have been made by this process by myself and two other persons, and *not a single failure has thus far been experienced.*"

Method of Treatment. Prof. Hudson, by long experimenting and reasoning, arrived at the conclusion that the "*best possible condition for the conveyance of therapeutic suggestions from the healer to the patient is attained when both are in a state of natural sleep; and that such suggestions can be so communicated by an effort of the will on the part of the healer just before going to sleep.*" The theory is that the conscious mind being at rest during slumber, the natural mind, sometimes called the "subjective" mind, which controls the involuntary actions of the bodily organs, can be, and is, influenced by

suggestions from other minds. The same could be done during wakefulness if the patient could place himself in that same passive, receptive attitude that he perforce takes during sleep. As it is, a large share of the cures made by our best physicians are made, not by the medicines, but by the power of suggestion born by the physician's confidence and the patient's faith. Every one has experienced the ready helpfulness of a visit from some doctor in whom he had implicit faith, when another, and possibly fully as good a doctor, failed to give relief.

Guiding Horses by Will. Every expert horseback rider knows that he can guide his horse without the bridle. The writer, when a youth, on more than one occasion won a wager that he could make his horse, when coming to a fork in the road, take either branch road without touching bridle or in any other way guiding the horse than by simple strongly willing the horse to take the desired road. Even when it required the horse to take the opposite from an accustomed road he never failed. Old horsemen on the plains know of this peculiarity without attempting to explain it, and know, too, that when lost this very power often prevents speedy return to the trail because the rider unconsciously influences the horse to turn, when if left to itself the natural instincts of the horse would lead it in the right direction.

The explanation of this power is that the unconscious mind of the horse, which directs its actions, is moved by suggestion from the directing mind of the rider, and the horse simply obeys a natural impulse which it has not the mental ability to resist. The secret of success in mental therapeutics lies in the passive state of mind—a state greatly aided by faith—which enables the natural or subconscious mind to receive and act upon proper suggestion.

Auto-Suggestion. The greatest possible benefits are obtainable through self-treatment on the same principle and by the same methods as are used by the hypnotist or the mental healer. If we can but conceive that our conscious and subconscious minds make us in reality two minds—two persons—the conscious or objective mind treating the subconscious or subjective mind which in turn treats, through its nervous control, the affected organs, it will not be so difficult to comprehend. The easiest and most positive benefit of auto-suggestion is in warding off sickness or disease.

Fundamental Principle. The fundamental principle to be always kept in mind is that the unconscious mind (or mental force) has complete control of all the functions and organic acts of the body, except as it is started in new directions by the conscious mind (or mental force). The proverb that "if a man tell a lie often enough he will come to believe it true," is eminently true of our physical ailments. The man who *thinks* he will take a contagious disease, is ten times as apt to become ill as is the man who *thinks* that he will escape—will keep well anyhow. To simply, in the mind, deny the power of disease to obtain the mastery, is the greatest agent known to-day in warding off disease.

Chronic Diseases Can Be Cured. Professor Charcot, the great French scientist, once said that by persistent mental suggestion that the cure is now begun and going on, and by the cultivation of a confident belief in the fact, every chronic disease known can be cured. The *only* obstacle lies in the patient's lack of confidence and lack of a persistent *mental attitude* of belief and expectation. It has been proved that the better way, usually, is to express the suggestion by spoken words, repeated and persisted in. Colds, constipation, grip and other diseases have been repeatedly cured by this means alone.

Healing Shrines. Thousands upon thousands of chronic invalids have been permanently cured at the grotto of "Our Lady of Lourdes," in Southern France, simply because of the long mental attitude of hope and expectation that preceded their appearance before this famous shrine of the great Catholic church. It is really a cure by Divine help, because the Divinity is the author of the natural law which makes all such cures possible. By imitating the conditions, and never for one moment allowing one's self to lose hope, expectancy and trust, every individual sufferer can make a shrine like unto "Lourdes" of his own home. It is equally true that failures are due to loss of faith and effort, because immediate results are not apparent.

Faith and Prayer Cures. That genuine cures have been and still are being made by prayer and by a childlike and absolute faith cannot be denied, however skeptical of the efficiency of the method we may be. In view of what has been said, it is evident that the cure is due to the effect of the suggestion to the subconscious mind while in the most receptive attitude brought about by the concentration due to the continued prayer or state of faith.

Miracles Possible. The Rev. Edward Macomb Duff of the *Living Church*, the leading religious newspaper of the Protestant Episcopal Church in America, says, in commenting on the reports of the British Society for Psychical Research, of which the Bishop of Carlisle is a member: "According to these evidences, the human mind in a certain condition of passivity—sometimes in hypnosis and sometimes in a state superficially indistinguishable from normal wakefulness—manifests certain faculties and powers which are supersensory and supernatural, and at the same time manifests singular limitations and weakness, in that it becomes the slave of the suggestion. The bearings of these facts upon Christian evidence are, it seems to me, in part self-evident, and, for the rest, apparent upon a little reflection.

"The first self-evident conclusion derivable from the facts is, I think, that the existence of a superphysical or of a supersensory, becomes a fact resting upon scientific demonstration." This, of course, is fatal to skepticism of the materialistic kind. He also states that it makes the miracles of Christ and the apostles more probable, as it is proven that the miraculous is taking place every day.

Christian Science. The theory of the Christian Scientist healer is that matter is unreal, that, therefore, our bodies are unreal and that

there is no such thing as disease; that the latter only exists in the mind, which is the only thing that is real. The proposition that our bodies are composed of matter, but that matter has no existence, is, on the face of it, too absurd to admit of argument. But the fact that the believers in Christian Science are numbered by the hundreds of thousands, and that the cures performed by them are of daily occurrence and often almost miraculous, makes it a phenomenon worthy of study. Here, again, it may be readily understood, if the control of the subconscious mind over the bodily functions and in turn its susceptibility to strong suggestions, either from another mind or from the patient's own conscious mind, is admitted. The very attitude of mind and the oft-repeated statement of the unreality of matter, and the utter impossibility of disease, produce exactly the conditions necessary for the influence of suggestion. A sort of self-hypnosis is produced with the same effect frequently, as in hypnosis induced by the hypnotizer. The truth underlying all these phenomena is of the highest importance to the entire human family, and when once universally studied, understood and practiced, will make the doctors' business a meager one.

The Natural Mind. The very diligent study in the past few years by our most able thinkers and experimenters, has proved beyond reasonable doubt the intimate relation between the natural mind and the functions of the body.

We say the *natural* mind to distinguish between the inborn capacity and the conscious mind which is made what it is by education and outside influences. The *natural* mind is the one that rises to action during our most quiet moments, during delirium and during sleep. It is what enables the sleep-walker to do things he could not do when awake.

Science—Christian or otherwise—attempts to make it possible for us to give ourselves up to the control of this natural or often called "subjective" mind. Everyone who has had dealings with the insane has noticed how, for instance, the dyspepsia from which they suffered before they went "out of their mind," as we say, suddenly disappears. The insane invalid will eat a hearty meal with impunity which would have thrown him into convulsions had he eaten it before he "went out of his mind." Why? Science says the *natural* mind now controls the functions of the body and orders the stomach to regain its tone through its power over the nervous system. Similarly with other ailments which are due to a wrong adjustments of the various parts of our delicate organism.

The Electric Circle. Wonders can be accomplished if from six to twelve people will sit in a circle holding one another's hands and keeping perfectly still for from twenty to sixty minutes and all constantly thinking about some one definite thing agreed upon beforehand. If that definite thing is the recovery of one of the number from a severe headache they will nearly always succeed. Always, in fact, unless the headache is caused by a too full stomach which has fermented or soured its contents and wants to throw it out. If it is the recovery of a friend from fever it often has a truly marvelous ef-

fect. If some of the members of this circle are troubled with excessive nervousness or are peevish or angry, or completely out of temper with everything, the peace and kindly feeling that will soon take the place of the irritability is truly wonderful and alone well worth holding the circle for.

The best time for a circle is at night in a mild or dimly lighted room in the quietest part of the house. After many sittings and especially if there is a good understanding between the several members—no skeptics among them whose attitude of mind acts as a resistant—and if they all honestly concentrate their thoughts upon one single thing, previously agreed upon, they can generate enough electric force to lift a table. There are numerous instances on record where such a circle, concentrating their thoughts for some time in perfect quiet upon the idea of the immediate recovery of some absent sick friend, succeeded in causing that friend to suddenly exclaim, "I am getting better, I think, I feel ever so much better," and upon investigation actually find the fever rapidly going down, the pulse approaching the normal and all the strong symptoms of the disease abating. Nor are there wanting instances of absolute cures thus affected in a few moments.

Telepathy Applied to the Cure of Disease. Mind cure is talked of and practiced by an increasing number in almost all parts of the country. In Florida a society headed by some Boston women, has founded a flourishing colony whose members are devoted to the mind cure. And it cannot be denied that apparently they meet with considerable success. Everybody knows how when one has "something on his mind," it affects him. Often the ordinary operations of nature are checked by it. The same is true of the emotions (which are but a part of mind). Nearly everyone knows of some family where a daughter through baffled love changed quickly from a buxom healthy physique to a thin and worn looking one. If the body thus responds to the *accidental* influences of mind, why should it not respond equally well to *pre-determined conscious* efforts of the mind?

A very simple experiment will enable most persons to display telepathic power. Let him be securely blindfolded by thick folds of cloth over each eye held on by a kerchief or towel. Now let several persons, including the blindfolded one, join hands in a circle. From a pack of cards turned face down, let one be selected at random, being careful that no other card is exposed. Now place the selected card where all can plainly see it. Let them continue to gaze on it and fix their minds on the card and keep perfect silence. If the blindfolded one will remain perfectly passive, simply watching for visions, he will soon begin to see shapes passing before his vision which by and by will develop into something more or less distinct. It may be a heart floating in space (ace of hearts); it may be that his mind will bring a vision of three clubs or of real diamonds arranged in the form of the spots on the card. He will at once name the card. If honestly performed he will nearly always tell correctly.

The London Society for Psychical Research, in their published volume entitled "Phantasms of the Living," reports a large number of most carefully investigated instances of unmistakable telepathic communication. One Sunday evening in November, the writer states, having been reading of the great power of the human will, I resolved with the whole force of my being to make my form visible in the front room of a house at 22 Hogarth street, Kensington, London, where two ladies of my acquaintance slept. I had not mentioned my intention to make the experiment to any one. The time when I had determined to appear was 1 o'clock A. M. With this on my mind I fell asleep and woke next morning unconscious of anything having happened. Three days later I called on the ladies, when the elder one told me, without my having alluded to the subject, that she had been much terrified on Sunday night by perceiving me standing at her bedside and that she screamed and awoke her sister who also saw me. When I asked her what time it was when this occurred, she replied: "About 1 o'clock in the morning."

Many people would have imagined that these ladies saw a ghost or a spirit. But that by no means follows. What they saw was due to a mental picture caused by the strong willing of the individual just before he went to sleep. It was simply a telepathic communication to the ladies' minds. Innumerable instances of a similar nature are recorded.

Emanuel Swedenborg, the founder of the Swedenborgian church, was remarkably gifted with telepathic and clairvoyant powers. On July 19, 1754, returning from a visit to England, he landed at Gottenburg, stopping with a friend. At 5 P. M. he rushed into the drawing room, pale with dismay, and announced that fire had just broken out in Stockholm and was burning fiercely; that he feared for the safety of his home and family. A little later he sorrowfully stated that the home of a dear friend had just been reduced to ashes. At 8 o'clock he joyfully exclaimed that the fire was under control before it reached his house. The news, of course, soon spread through the town, but very few believed it, for Stockholm was 170 miles away, and there were no telegraphs in those days. Two days later the royal courier arrived and brought the news of the fire, which had occurred at the very hour when Swedenborg said he saw it. He was then seventy-two years of age. Twelve years later he was again in England, and sent word to Wesley, the founder of Methodism, that he wished to make his acquaintance. Wesley sent word that he was about to start on a journey, but on his return in six months he would be glad to meet the great Swede. Swedenborg sent back the reply that it would then be too late as the 29th of March next was the date of his death. He died on March 29 following.

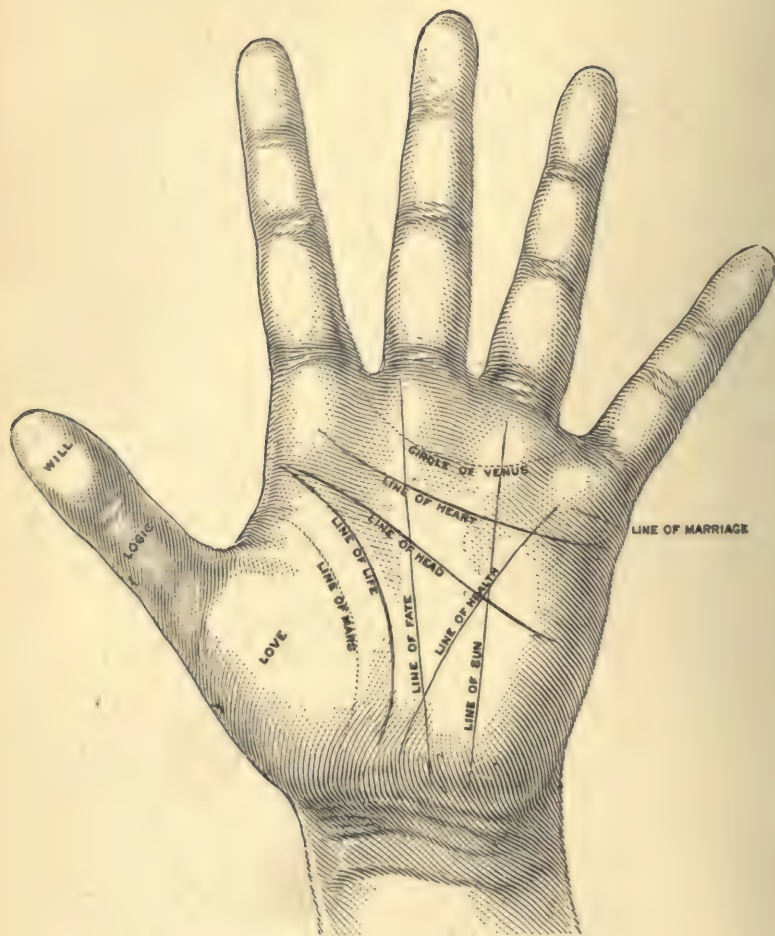
Equally plentiful are instances where patients were treated successfully by telepathic suggestion, even though vast distances apart. The instances are most numerous among relatives or close friends, or those who are *en rapport* with one another. Rheumatism, neuralgia,

dyspepsia, sick headache, liver complaint, chronic bronchitis, paralysis and many other diseases have thus been cured.

Conclusions. There can be no longer any reasonable doubt that a subtle power exists somewhere within the human organism by means of which sickness and contagions can be to a large extent prevented and many diseases and ailments cured. Nor can it be denied that in order to start this subtle power in operation extraordinary means are usually required. The number of instances thus far carefully investigated seem to prove that the success of healing by faith, of Christian Science, of hypnotic suggestion, of telepathy, of the numerous isms like Dowieism, Teedism, Kneippism, etc., as well as the special success of individual practitioners of the allopathic, homeopathic and other schools of medicine, all depend upon one and the same thing. And that is not primarily the medicine administered, not the application of the water or the oil, not the laying on of hands, not the walking barefooted on the grass wet with dew or frost, not the pilgrimages, none of these, though all have their places and their influence, and hence may not be wholly condemned—it is not these that cause the cure but an intuitive power of the subconscious mind which is called into action by these various and very different media. Somehow in our present groping, materialistic condition some one of these various mediums seem to be necessary to enable the soul to control the functions of the body. Abundant experiments have proved that it is possible to accomplish the same thing by strong intelligent and continued efforts of the will.

SCIENCE OF THE HAND.

Once in every seven years, physicians tell us, the body is completely changed. This change of course goes on all the time. Particles are constantly being destroyed by friction or wear, by accident or by decay and as rapidly new particles take their places. In seven years all the body will have been thus changed and a similar body will have taken its place—similar except for the alterations caused by the effect of the mind. Everybody knows how the lines of care creep into the face, or how a morose and gloomy disposition soon shows itself in the countenance. We notice the faces of our friends and associates and read there joy or distress, health or illness, quickly enough. We might quite as readily read the same thing in the hand if we were equally observant of it. The hand is being constantly used to carry out the thoughts of the brain. Students of the hand soon observed that certain characteristic lines and certain slight fleshy risings called mounts, were found in all hands and that these varied according to the inherited condition of the person's body and his own habits of thought. We say his *thought* instead of his acts because thought always precedes acts. It was also observed that certain diseases and certain lines in the hand always went together. Also that abnormal tendencies, such as the tendency to destroy, or to commit



SCIENCE OF THE HAND.

How the skilled palmist can read in the palm of the hand the story of one's past life and foretell sickness and future events.

Left hand shows traits of character you were born with
Right hand shows how your life has changed this. See page 39.

murder, to steal, or the tendency to insanity, idiocy, etc., were always accompanied by an abnormal disposition of the lines, and, furthermore, that these unnatural arrangements of the lines were always alike, or nearly so, in each and every person having the same or similar tendencies. The students of the hand soon learned to tell with unfailing accuracy the tendency to lunacy, or to kleptomania, or to consumption, or to heart disease and many other conditions, by simply seeing the hand and no other portion of the person whatever.

In the normal hand of every ordinarily healthy person are found three primal lines which together describe an imperfect capital *M*. One line begins about the middle of the outer side of the palm midway between the base of the thumb and forefinger. It extends downwards in a semi-circle, ending about the middle of the base of the thumb, or where the hand joins the wrist. This is called the line of life, because its perfections and imperfections are directly proportioned to the natural physical conditions which tend to health and life or disease and death.

The next line which, beginning at nearly the same place as the line of life, extends more or less directly downward across the palm, is termed the line of the head. Its development has been found to correspond closely to the mental development and capacity of the individual. The third line begins at or near the base of the forefinger and extends in a curve downward across the palm, curving toward the base of the little finger. This is called the line of the heart and indicates the strength or weakness of the affectional nature.

The experienced palmist can unerringly tell, for instance, such things as whether the person was born one or more months before his or her time, and at what date in life serious illness or misfortunes have befallen them, and can, without fail, tell the general temperament of the person and how he has in the main hitherto conducted himself. And all this not by any secret power, but simply because nature has written in the hand the record indelibly in lines and "crosses," in "squares," in "islands," in "spots", and in "branches," and anyone who has learned this alphabet can read the history as he can a page from a printed book. Thus, for example, where little hair lines are found branching off or adhering to the line of life, it has been found that this always indicates a dissipation of the vital powers at about a date in the life corresponding to their position on the line, appearing at the end as they so often do, they show the breaking down of vitality in old age. If this line extends well out into the palm and is long and of good color, this in itself indicates robust strength and long life. If, on the contrary, it follows closely the base of the thumb, the physical structure is not good. The shorter the line the shorter the life.

The Line of Life. This line should be long, narrow and deep, without break or crosses of any kind. It then indicates long life, health and vitality. But if broken in one hand and unbroken in the other, it indicates some serious illness. If broken in both hands it indicates a short life. If, at the beginning of the line, it is broken into

short connected links, like a chain, it proves ill health in early life; if these appear at the end, it denotes disease towards the latter part of one's life.

Line of the Head. This line may start from a point near the base of the forefinger, or it may start at the same point where the line of life starts, or it may rise in the line of life and extend down across the hand. If the first, and yet touching the line of life, it denotes mental vigor, daring and ambition, especially if long. If it rises where the line of life starts, and very close to it, it indicates a cautious, sensitive, nervous temperament. If it starts within the line of life and crosses it, this indicates a fretful, worrying, inconstant temperament and less mental power. A double line, which is very rarely found, is a sure sign of brain power. It is found in the hand of such men as Gladstone, Disraeli and Newton. If the line is broken in two on both hands, it indicates some serious accident or derangement of the mind.

The normal position of this line is directly down across the center of the palm. If it shows an abnormal curve toward the wrist it is a certain sign of abnormal mental condition. Such persons are apt to go insane. If this is noticeable in a child's hand, it may grow to maturity without any unnatural symptoms, but whenever some severe mental shock comes, such a person is sure to become mentally unbalanced. The hand of a natural born idiot is remarkable for the downward curve of this line and for the number of little links or "islands" in it.

Line of the Heart. This line begins either in the thick prominence or "mount" at the base of the forefinger, or between the first and second finger, or at the base of the second finger, and extends in nearly a straight line across the hand. This line indicates the strength or weakness of the affections. If it begins with a forked line in the mount below the forefinger, it is a sure sign of an honest, strong, affectionate nature. If, however, this line rises in the prominence at base of second finger or divides with a fork here and the other towards the first finger, it proves that the person is jealous, or sensual and fickle. It has been observed that in persons who have contempt for the opposite sex this line is always broad and looks a little like a chain, while in those having deep and permanent but subdued passion, this line generally rises between the first and second finger, is narrow, and has no very marked color.

Other Lines. Besides these principal lines there are a number of lesser lines, each having its special meaning. Thus there is the "line of fate" extending down the center of the hand upright. When this line rises in the center of the wrist and extends up to the base of the second finger, it is considered as an indication of a successful career. There is also the "line of health" which extends downward from near the base of the little finger, but is usually faint and sometimes hard to find. If it is distinct and joins the line of life the point of junction indicates the time of death from natural causes. It is a

sign of good health to be without this line. There is also the "line of the sun," which starts in the middle of the palm and rises towards the base of the third finger. Its prominence is indicative of brilliancy and of a sunshiny temperament.

People who are by nature intensely nervous, easily worried and excited, usually have the entire hand covered with a multitude of fine lines, and if this sign appears in a child's hand, such child should receive more than ordinary careful training. The opposite is also true, for phlegmatic, dull people have few lines in the hand. The color of the palm is also important, for there are more nerves in the hand than anywhere else, and more in the palm than any other part of the hand. A pale or almost white palm is always found in extremely selfish people, while a delicate pink denotes a hopeful sanguine temperament, and a red color robust health, quick temper, animal spirits, etc.

SHAPES OF THE HAND AND FINGERS.

Much of a person's character is shown in the shape of the hand. There is the "square" or useful hand that accompanies the practical matter-of-fact worker in whatever line. The "spatulate" or moderately square hand with fingers more or less curved, sometimes the thumb bent back, and indicating a nervous active person. The "philosophic" hand with its long tapering fingers often knotty on the knuckles and belonging to people who love mystery or who are students in whatever sphere of life they may be placed. The "conic" or artistic hand is medium sized, the fingers thick at the base and tapering towards the ends. Such people are apt to be impulsive and are guided by instinct more than reason. If in addition, on such a hand, the line of the head slopes towards the lower outside corner of the hand it denotes the typical artist.

The Thumb. Most important, perhaps, is the thumb. Every manager of asylums for the feeble minded will agree as to the generally weak and poorly developed thumbs of the patients. It is a common belief with midwives that if an infant after birth keeps its thumbs covered with the fingers, it foreshadows physical delicacy, but if after the seventh day it still keeps its thumb covered, it indicates mental weakness. The thumb should be long and firm and the joints of nearly equal length. If the first joint or nail joint is excessively long, it means that the possessor has a very dominating will. If the second joint is much longer than the first it indicates that the individual, though he may be very intellectual, lacks the will power to carry out his ideas. If the first joint is very supple and bends back it usually indicates a very extravagant character in every way, while the opposite is true of the straight, stiff-jointed thumb. If the thumb is short and thick it indicates the preponderance of the coarse, brutal nature which will show itself on occasions even if training and environment may have hidden it for a time. "The thumb individualizes the man."

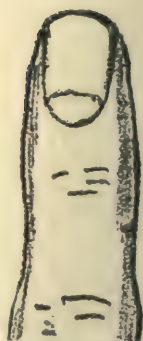
The Fingers. Fingers are either long or short, thick or slender, straight or crooked, stiff or supple. Long straight fingers, not too



Throat Trouble.
1



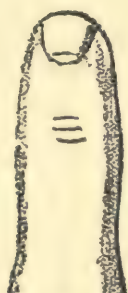
Bronchial Affection.
2



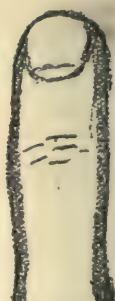
Lung Trouble.
3



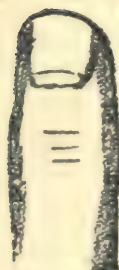
Consumption.
4



Bad Circulation.
5



Heart Disease.
6



Angina Pectoris.
7



Paralysis.
8



Epilepsy.
9

The above drawings show characteristic types of fingers and nails which indicate in the possessor a tendency to weakness or disease.

thick, are found on people who are exact and love detail and are quick to notice little things. Short fingers belong to people who are quick and impulsive, careless for appearances, jump at conclusions. When fingers are thick and clumsy, as well as short, they belong to a nature that is cruel and selfish. If the fingers are rather slender and inclined to bend backwards, they indicate a nature clever and charming, inclined to be inquisitive. Fingers that are naturally crooked or twisted denote an ill nature. The fingers of a selfish person are usually thick at the base, if waist like at the base they denote an unselfish person. Spaces between the fingers of the open hand denote independence of thought and action, especially when the space is wide between the third and fourth fingers.

If the first or index finger is very long it indicates a proud, domineering nature. Napoleon the Great had an unusually long index finger—fully as long as the middle finger. When the third finger is as long or nearly so as the first, it denotes great ambition for riches and honors. If excessively long, almost as long as the middle finger, the hand belongs to a man who is naturally a gambler. A long little finger denotes mental balance and power in speaking or oratory. Mr. Gladstone's little finger almost reached the nail of his third finger.

The Nails. These more than any other part of the hands indicate tendency to disease. In the illustration of the nails, Fig. 1 shows the kind of nail of people who are subject to throat affections. Fig. 2 is a characteristic type of one disposed to bronchial troubles. A similar type of nail, but longer, and especially where it is much curved, both from side to side and up and down, is indicative of lung trouble (Fig. 3); when, in addition, it is inclined to be square at the top and narrow at the bottom (Fig. 4) it indicates consumption. Long nails wide on top and bluish in color indicate imperfect circulation and nervous disorder. Very short nails and small (Fig. 5) indicate bad circulation from heart trouble. When shaped like that in Fig. 6 the person is liable to attacks of angina-pectoris (valvular disease of the heart). Short triangular nails (Fig. 7) or those of similar shape but wider at top and flat, indicate a tendency towards paralysis. Fig. 9 represents a type found on people liable to fits. In general it may be stated that the long, moderately curved pink nails represent good health and calm disposition. Short nails, pale in color, indicate tendency to disease of the trunk or lower limbs, and critical or quick-tempered dispositions. Where the nail is broader than it is long it indicates a combative, sometimes a brutal or sensuous nature. Clean, smooth nails, are a better indication of health than rough or lined or spotted nails. We have thus briefly outlined the principal characteristic indications of the hand as a guide to natural tendency towards health or disease, and as a guide to character. It must be borne in mind that no one indication is to be accepted as final in itself, but the different parts, the shape of the hands and fingers, the shape and color of the nails and the lines, all should be taken into consideration. One indication modifies, more or less, the other, and hence the judgment must be on the hand as a whole.

DIVISION THIRD.

LOCAL HYGIENE.

HEALTHY AND UNHEALTHY RESIDENCES.

The location of the home, whether it be for temporary sojourn or for a permanent habitation, is a question at all times of serious importance, no matter from what aspect it may be viewed. Among the many considerations which have to be regarded in choosing a building site, or selecting a building for occupancy, there is none of graver moment or that involves more serious and far reaching consequences, affecting the permanent happiness and well-being of all immediately interested, than the sanitary conditions which the location, soil and surroundings create for the chosen home. In these days the fundamental principles of hygiene are fairly understood, and an enlarged knowledge of sanitary laws is eagerly sought after and applied to the affairs of life, in no relation of which is their observance of greater importance than in the decision of the question, "Where shall we establish our home?" After all other ordinary considerations have been satisfactorily adjusted, there yet remains the most important of all to be decided—where to secure the most favorable conditions for health and the greatest immunity from every influence that prejudices its possession and enjoyment. In the face of so grave a responsibility as is involved in the selection of the hygienic surroundings with which he is to permanently invest his family, no person of intelligence will select a location for a home contrary to the dictates of ordinary sanitary laws; but it is important that he should have for his guidance the information here given upon principles not so well understood. Modern sanitary science has traced to MALARIA the basis of a large proportion of the diseases which afflict humanity; and in fixing upon a home, one who is conversant with the favorite lurking places of this dread evil, is naturally impelled to look first to the character of the soil. Scientific observation and investigation have ascertained that certain soils contain the elements of disease, absorbing effete substances and exhaling noxious gases which are evolved in their chemical changes, and that buildings erected thereon become reservoirs of this great producing-cause of disease, so that all who dwell therein are inhaling life-destroying miasms with every breath of this polluted atmosphere; but it is a source of gratification and satisfaction, that a diligent study of nature's

laws as developed by modern scientific research may enable us to avoid the sources of all this evil and its sad results, and that this great Samson can be shorn of his locks, and made to yield gentle submission to the dictation of science as directed by simple means, in prudent hands guided by common sense.

Residences Liable to be Affected by Malaria—Some time since, a paper, published in New Orleans, stated, "The yellow fever has broken out in the city, under every conceivable variety of circumstances; when the streets were clean, and when they were filthy; when the river was high, and when it was low; after a prolonged drought, and in the midst of daily torrents; when the heat was excessive, and when the air was spring-like and pleasant; when excavations and disturbances of the soil had been frequent, and where scarcely a pavement had been laid or a building erected. Almost the only fixed and undeniable fact connected with the disease is, that its prevalence is simultaneous with the heats of summer, and that frost is its deadly enemy."

From these facts, then, we may draw two important conclusions in reference to malaria, viz., that heat and moisture are essential factors in the production of this disease; and that it cannot exist when there is severe frost.

It is known that some thirty or forty years ago Louisville, Kentucky, was one of the most pestilential spots in the habitable West. But by a wise system of draining and filling it is now a healthy and beautiful city.

Means of Avoiding and Counteracting Malaria—Growing hedges or trees, between a malarious locality and a dwelling, counteract the miasmatic influences of the former. The leaves seem to absorb and feed upon the malaria; and for the better protection of health, there should be a space of 50 feet or more, between the trees, or hedge, and the house. The thicker and broader and higher the hedge, and the nearer the leaves to the ground, the better; for it is there that malaria seems to exist in its greatest malignity. It is seldom concentrated enough at the height of ten feet to be materially hurtful.

Localities in Time of Plagues—In the cities of the Old World, in the times of the plagues and pestilences, the inhabitants had a custom of living in the upper stories of their dwellings while the disease was raging. They would not even come down to obtain marketing, but would let down baskets by ropes to the country people, for the provisions they wished to purchase. They failed to discover why the country people could come to town with impunity, while they themselves were only safe from disease when they lived in the upper stories of their dwellings. From this we infer the existence of the prejudices now universally prevailing in level, prairie districts, to have the sleeping rooms in the second story.

The philosophy of this affair is this: malaria is condensed by cold, made heavy and falls to the earth, hovering, as it were, near its

surface; hence it is not breathed unless a person lies close to the ground.

On the other hand, heat so rarefies the malaria as to make it comparatively harmless.

The coldness of night condenses and renders the malaria heavy, and, therefore, it is thrown to the surface of the ground, while the heat of the day rarefies it, and sends it upward toward the clouds again. From these facts it is readily perceived why country people, going to town, as they did in the day-time, could do so with comparative safety. The effect of the sun-light also is to enhance the purifying process.

Not more than half a century ago, the yellow fever and other deadly diseases prevailed in Charleston, South Carolina, and it was known at the time to be almost certain death, except to the acclimated, or to the very hardy, to sleep in the city a single night. Yet the farmers came to town at mid day, under the blistering summer sun, with perfect impunity.

Location of Bed-Chambers—From June to October, people should sleep in the upper stories of their dwellings. And the rooms should be so situated that the rays of the sun can be admitted into them some time during the day. There is an Italian adage, to the effect that, "*Where the sun does not enter, the doctor does.*"

When Malaria Does its Destructive Work—Malaria is most pernicious about sunset and sunrise, because the cooling of the atmosphere, at the close of the day, causes it to become condensed above, and therefore heavy, and to fall to the earth; while, after sundown, it has settled so near to the earth as to be below the mouth and nostrils; hence it is not breathed. Another reason is that the bodily vitality is lowered during the night, and thus we have a smaller resisting power between sunset and sunrise. When the sun begins to rise in the morning, the malaria grows warm and begins to ascend; but after breakfast it is so high as to be above the point at which it can be breathed; and besides, it is so rarefied—so widely diffused—as to be innocuous or harmless. Therefore, the practical truth follows, that malaria exerts its most baleful influence on human health about sunrise and sunset; hence, of all the hours of the twenty-four, these are the most hurtful in which to be out of doors; and for the same reason, the hours of midday and midnight are the most healthful to be in the open air in malarious seasons; that is, from June to October, north of the thirty-fifth degree of north latitude.

How to Render Malaria Harmless—But, unfortunately, the cool of the early morning and the late afternoon are the most pleasant times in the twenty-four hours for field-work, and the industrious farmer will be exceedingly loth to spend these hours in-doors. There is, however, an almost infallible preventive of any ill effects arising from such an exposure to miasm, or malaria, about sunrise or sunset; and it ought to be made known



MALARIA.

[An almost invisible mist lying near the ground.]

The greatest foe to human health.

There is no one thing known that causes so much disease and sickness as this poisonous miasm.

It can be rendered harmless by simply drinking hot a cup of half milk and half coffee before going out in the morning.

Diseases originating from malaria may be effectually avoided by arranging the sleeping apartments as directed on page 48.



throughout the country. Farmers whose houses are already built in malarial districts, such as in low, "*made*" lands, near stagnant water, or in the neighborhood of sluggish streams, may exempt themselves, almost altogether, from the whole class of malarial diseases, such as diarrhea, dysentery, chills and fever, of nearly every grade, by eating a warm breakfast before they attempt to go out in the morning, and by taking their suppers just before sunset. The philosophy of the matter is, that a hot or hearty meal so excites the circulation, and so invigorates the whole frame, that the latter acquires the power of resisting the disease-engendering influences of malaria. The Creoles, in portions of Louisiana where vegetation is rank, as in swamps, upon which the summer's sun beams with great power for many hours during the day, are proverbially exempt from fevers, as are others, who adopt their habits—that is, have their breakfast, or at least a cup of hot coffee with milk, on rising, or have it brought to their bed-side before they rise.

The value of this practice is known and appreciated in many other portions of the country, and used with complete success.

Malarious Locations not Sickly at all Times—It may be practically, in some cases, useful, to know that in one year a house on the banks of a sluggish stream, or mill-pond, may be visited with sickness; the next year it may be exempt, because it is a very cold summer; the third year it will escape, because it was a very hot summer; the fourth year it is a very healthful habitation, because of a very wet summer. The causes of these variations are briefly as follows :

1. Malaria cannot rise through water, and the wet summer kept the bed of the pond or stream covered.
2. There can be no malaria without dampness, and the hot summer dried the bed of the pond to dust.
3. The cold summer did not give the degree of heat necessary to the generation of malaria.
4. Modern scientific discovery has taught us that the existence of *microbes*, is the real cause of what we term malaria and the production of these microbic germs is caused by decomposition; this is brought about by alternate rains and summer heats promoting decay in vegetable matter.

Another effectual prevention against malarious diseases. As has been stated, heat rarefies malaria, rendering it comparatively harmless; therefore, in order to accomplish this result, let a brisk fire be kept, for an hour, in the sitting room, at sunrise and sunset, from July to October, and the family repair to this room, and remain there until after breakfast, and as long at sunset. This done, it would save an immense amount of suffering from chills and fever, and other malarious diseases.

Where to Build—To those who are able to choose their habitations we offer a few suggestions. The subject is especially important to delicate families, and to persons predisposed to con-

sumption; it also deserves the attention of those who are healthy, and desire to maintain that condition unimpaired in themselves and their children. We advise, if possible, a country residence, and the selection of a house so constructed as to secure dryness of the foundation walls and roof. The site should be dry—a gentle slope, a gravel soil—and the frontage generally southerly or easterly; the bedrooms, especially those appropriated to cases of sickness, should have this aspect. It should also be a site *from* which there is thorough drainage, but *toward* which there is none. If the house is not upon a slope, the artificial *drainage* must be perfect. In towns and crowded places, in which the accumulation of decomposing and decomposed animal and vegetable matter is great, artificial channels or drains must be so constructed that all noxious matters and vapors may be rapidly removed and carried to a distance, before they can decompose and impregnate the atmosphere and water with their vicious poisons. Every dwelling, to be wholesome, should be accessible to the free passage of currents of air, and provided with an unlimited supply of good water. In the choice of a site for a house, a locality should be avoided in which the water is impregnated with lead, iron, or other mineral substances, or in proximity to stagnant waters; the ground should be above the level of the mist or vapor which rises after sunset in marshy and other districts. In short, the fundamental condition of healthy dwelling-places is—perfect purity of air and water; this must take precedence of all other considerations. The cause of the spread and fatality of all the plagues of the middle ages in the Eastern hemisphere was neglect of the conditions necessary to secure pure air and cleanliness.

Surroundings—Other points of subordinate importance may be glanced at. The house should not be too closely surrounded by trees, or in immediate proximity to thick woods, as they both attract and retain moisture, while they exclude much sunlight, and prevent evaporation and also the free circulation of air, and thus render the climate cold, damp, and consequently unhealthy. A cheerful situation, at the same time commanding the view of green trees, hedges, shrubs, etc., has a beneficial tendency. If compelled to live in a town, the house should face a park, square, or other open place, or at least be situated in a wide, airy street, with cheering pleasant views. Lastly, a house should contain adequate bath arrangements, or at least provision for free personal ablutions.

Some who read these pages may not have it in their power to carry out these hints fully, but be compelled to live where their occupations, families, or means determine; nevertheless, even such may be benefited by these suggestions; for, although they cannot secure perfection in a house or situation, they may aim at an approximation to it.

It is true that many of our readers may be prevented, by circumstances, from selecting the kind of house which would most

conduce to their own health and that of their families, but all can avoid many serious dangers, arising from badly located or unhealthy dwellings, if these are clearly pointed out to them and they comprehend the necessity.

Air and Water—Concerning the importance of wholesome air and pure water, too much can hardly be said; and in selecting or building a house, it is impossible to exercise too great care against the presence of soil, situation or method of construction, which does not meet these conditions of health. In city houses, of course, the great danger is in the foul air which is communicated by and escapes from the sewers, through the often empty waste-pipes, the openings of which are seldom properly closed and securely trapped by the plumber, and still more seldom receive proper attention from the inexcusable carelessness of all the members of the family. And yet, it has been well ascertained that, even more than this, there is no more fruitful cause of diphtheria, and of many other diseases but little less dangerous and deadly. When the house is built on what is called "made ground," that is, where earth, rubbish, manure, and a villainous compound of all other impurities, have been carted and emptied into sink-holes and cess-pools, until they were filled to the level of the neighboring streets, which is the case with many dwellings in graded towns and cities, of course, these impurities rise, permeate, penetrate and poison the atmosphere and the very walls of such a house for years retain the virus and communicate it to the unfortunate occupants.

Construction of Houses—In country houses, on the other hand, the air is generally pure; but the danger arises from sinking wells and cisterns in too close proximity to barn-yards, pig-styes, privies, etc., whence all impurities percolate through the loose soils, and into the water-supply of the family, too often impregnating it with fatal poisonous germs. It is now well known that typhoid fever, diarrhea and dysentery arise and prevail in particular neighborhoods from this sole cause. Country villages, in which, as it would seem, almost necessarily, their wells and cisterns are in dangerous proximity to the deposits of every species of excrement, are particularly liable to these epidemic scourges. In the west of London an outbreak of typhoid fever occurred in the parish of Marylebone. Early in August, 1873, several children of an eminent West End physician were taken ill of typhoid fever, and it was finally discovered that the milk cans of the farmer who furnished them milk were washed with water from a well infected by a privy vault near by. For this, the only remedy is in building-lots so large that the stables and privies may be removed to a safe distance beyond the water-drainage of the wells and cisterns. Care, in this respect, would save, annually, many thousands of lives.

It goes, almost without saying, then, that, in building or selecting a house for your family residence, you should have the necessary cess-pit as far from it as convenience will permit; taking care,

of course, that the house is not so near the deposits of your neighbor's filth, as to render it liable to a similar danger. The well or cistern should never be sunk within a distance of five times its own depth from any deposit of impurity.

Dampness—Even the smallest and poorest dwelling should have a cellar, which is well ventilated and kept as free from moisture as possible. Dampness promotes the growth of moulds, and is a powerful means of inducing and propagating disease. "The constant condition," says a learned physician, "according to all my observation, of diphtheria, is structural dampness of houses." He continues, "Remember, always, that if cholera, cholera infantum, diarrhea or dysentery appear in your family without obvious cause, *the chances are at least two to one, that there is something wrong with the water-supply, or the milk-supply, or the drainage of your house.*"

The bedrooms of a dwelling should be large, airy and constantly supplied with abundance of fresh air and sunlight. The immediate removal of soiled linen and all excrements, either liquid or solid, should be strictly enforced. These things are particularly important with children, because their lungs, stomach, etc., are much more delicate, therefore more susceptible to contiguous influences than those of adults. It is well to observe, for the guidance of the many who will read these pages, that the coloring matter of many of the dark-green paper-hangings is composed largely of arsenic, and that the exhalations from walls hung in these colors are highly dangerous.

It is unnecessary to repeat, that every new house, or newly plastered house, should be allowed ample time to dry, before it is occupied. In many European cities they allow a year to elapse.

It may be said with some show of reason that it is absurd to talk to, or to write for, a man as to his house and its surroundings, if he lives in a tumble-down cottage at the outskirts of a low-lying village, or if he occupies a tenement among the foul courts and alleys that exist in parts of our populous towns and cities. Dirt and disease usually accompany each other, and under some circumstances the extinction of the one, and the diminution of the other, is said to be a physical impossibility. If, however, a man's house be his castle in any sort of way, he may and can accomplish something within his castle, though he may have, in cities and towns, little or no control over the surroundings.

Other Matters—The air of the living and sleeping rooms can be kept comparatively, if not positively, pure by leaving a window sash partially open, and by keeping the chimney-shaft constantly clear, whether there be a fire in the grate or fire-place, or not. Water is usually plentiful, and there need be no practical difficulty in keeping floors clean. They should be washed on a dry day, and all the windows, as well as the door, freely opened during and after the operation. The expenditure of a very few nickels will buy suffi-



UNHEALTHFUL RESIDENCE—DEATH TRAP.

Why many residences cause sickness and death.

How to remedy it. See page 63.

The above building is but little short of a death-trap.



HEALTHFUL RESIDENCE.

cient limewash to coat walls and ceilings at frequent intervals, say as often as every six months. Two or three pounds of Sulphate of Iron (Copperas) dissolved in water and poured into the privy vault, is a very useful and effective disinfectant. Chloride of Lime may also be thrown in occasionally. A pound of commercial Carbolic Acid in a pail of water, is also one of the best purifiers we have. Whether the closet or privy is shared with others or not, it will be an advantage to see that it is not blocked, that it is washed regularly, that floor and seat are kept clean, that its walls are limewashed at least as often as those of the house within, and that, if any window exist, it is kept open as constantly as possible. With this, as indeed with all other windows, it is a good plan to nail a piece of wood along the top edge of the window slanting inwards, so that, when the top sash is open, the air from without is directed upwards, and so a draught is prevented. The ash-heap is frequently a nuisance. Foul smells may, however, be in great measure avoided, if nothing but ashes are thrown into ash-piles in a town. Potato parings, cabbage stalks, and other vegetable refuse should be burnt.

Water—It is frequently difficult to secure water fit for cooking and drinking purposes, even if the supply be fairly abundant, because the cisterns, casks, etc., in which the day's supply is collected, are very badly built, or very badly kept. Whether the supply be stored in cistern or tank, or any other receptacle, see that it is emptied and thoroughly scrubbed at least once a quarter. If it can be limewashed at the same time, so much the better. Remember the necessity of keeping these water receptacles covered, so as to prevent, as far as possible, the thousand and one impurities that exist in the air of towns from finding their way into and polluting the water after it has reached the receptacle from the main pipe. If the drinking-water has any taste or smell, or is at all thick in appearance, boil it always before drinking. If a filter be needed, buy two pounds of animal charcoal, and clean it by pouring on to it some boiling water. Dr. Parkes' cottage filters may then be thus prepared. He says, "Get a common earthenware flower-pot, and cover the hole with a bit of zinc gauze, or of clean-washed flannel, which requires changing from time to time; then put into the pot about three inches of gravel, and above that the same amount of white sand washed very clean. Four inches of charcoal constitute the last layer, and the water should be poured in at the top, and be received from the hole at the bottom into a large vessel. The charcoal will, from time to time, become clogged, and must then be cleaned by heating over the fire in a shovel. The sand and gravel should also be cleaned or renewed from time to time." This very simple and cheap filter, kept in constant use, and the boiling of all suspicious water, will render us tolerably safe from water-propagated diseases, among which typhoid fever, cholera, and dysentery are pre-eminent.

If the washing is done at home, great efforts should be made to accomplish it when the head of the house is away at his business,

and the children are at school. The work is at all times specially disagreeable to those not immediately engaged in it, and the damp air resulting from the hanging up of clothes to dry in an inhabited room is bad and unhealthy for the occupants in every way. The washing of towels and bed linen or handkerchiefs used during the prevalence of contagious or infectious diseases, should be done apart from the wash of other members of the family, and only after they have been properly and carefully disinfected, by being placed in a tub containing one ounce of Carbolic Acid to the gallon of water.

Bedrooms—In proportion as bedrooms are limited in size, so must the importance of keeping that space as clear as possible be carefully considered. All bed-hangings, curtains and clothes occupy spaces that had better be filled with air, make the room itself musty, and help to store up dust and dirt, as well as fleas and other still more objectionable insects. Hence, if one is compelled to live in a crowded locality, with little room-space, health will be best maintained by doing with as few hanging things as possible. Plain bedsteads and straw mattresses, with no bed-curtains and very little carpet, should be used. In fact the bedroom should contain nothing that is not absolutely necessary. It should be remembered that, in the matter of space, if there are but two rooms, it is better as a rule, to make a bedroom of the larger, though the reverse is generally done. If, instead of gas, a coal or other kind of oil lamp be used, it should be borne in mind that the commoner kinds of oil, *i. e.*, those that smell disagreeably, are not only extravagant, but unhealthy. On the score of health, as well as of comfort, lamps of all kinds should be kept very clean.

Bad Habits—In rural districts, the surroundings of the habitation, however humble it may be, have to be considered as well as the house itself. And here it is astonishing how much is often done by the occupier (unintentionally, or rather carelessly) to render the immediate vicinity of his dwelling-place unwholesome and favorable to the development of disease. In how many cases in villages and around detached houses is it the prevailing custom to throw all slops and refuse immediately outside the back door, so that a heap of decomposing organic matter and a pool of dirty water collect and remain from one year's end to the other? The children play about and inhale the unwholesome vapors; the pigs, fowls, ducks and geese take their pickings at leisure, each adding his mite to increase the existing filth; and the doorstep is a disagreeable and often a dangerous spot, although, by the way, few of those interested appear to be aware of the fact. To avoid this evil, a fair-sized tub should be provided, into which all slop-water should be thrown, and when the tub is full, its contents should be scattered over the garden, where it will assist fertilization, and the opportunity for evaporation will be increased and the odors more diffused.

Provision should be made for the exclusion of wet, and for the entrance of fresh air into the privy-pit during all seasons of the

year; also for the prevention of soakage from it into the ground; and the contents should be regularly removed at frequent intervals, and used as suggested, and during the intervals a solution of Copperas as previously mentioned should be thrown into the vault to prevent unpleasant and offensive odors. Comfort as well as health is promoted by insisting upon habits of cleanliness and decency in the use of such places, for their condition in many hamlets, and about solitary farmhouses, is often excessively disgusting. Earth-closets have been successfully adopted in many districts, and if they are carefully superintended, and only fine dry earth is chosen, they may be confidently recommended.

Insufficient Water—Many in rural districts are dependent solely on small streams in the neighborhood, which dry up in the summer, and are in numerous cases fouled by privies, slop-water, or other varieties of sewage. The water of ponds is sometimes used, and many houses have a shallow well near the house, and often at a lower level, so that sewage, slop-water, and other refuse soak into it. These things should be remedied by properly constructed cisterns. If it is absolutely necessary to keep water for any number of hours in the house, do not let it remain in the bucket, but keep for the purpose, a large glazed earthenware jar with a cover, or a covered stone jar, and clean it out thoroughly at frequent intervals. It is better not to use any sort of metallic pails for drawing the water, but to keep to the old wooden bucket, and great care should be taken that this bucket is not used for any other purpose than that of drawing water from the well.

Basements—A large proportion of houses still exist in this country that have no proper basement, but are built simply on the ground. As a natural consequence, when damp exists, the floorings rot, the walls are often more or less wet and sometimes dripping with water, and ague and diarrhea, rheumatism, etc., are the results. If, therefore, the cottage has no proper foundation, use all possible means to obtain a clear space between the earth beneath and the flooring of the rooms above. The earth should not be scooped out from below, but you should raise the floor a few inches, and leave openings in the walls here and there, so that this space under the floor may have free communication with the outer air. By adopting this simple plan, the woodwork will be preserved, the house kept dry from beneath, and much sickness saved. The openings should be protected by some sort of grating, and had better be opposite each other. But any apertures, however rough, are better than none at all.

The foregoing remarks are intended only for the use of those compelled to live in tenements in towns, or in rented houses in country districts. And, in such cases, it cannot be expected that the tenant will have much power or control over the construction of, or arrangements around, his dwelling-place. But even under these circumstances, individual energy and forethought and a small

amount of labor may accomplish a great deal in the way of comfort and also in preventing disease.

Soil—Soil is both an air-conductor and a water-carrier, and it contains a great variety of solid matters. As regards air, carbonic acid gas is found in all porous soils, arising chiefly from the oxidation of organic matter. Gases of all kinds will find their way through the soil. Houses act as suckers to the ground on which they are built, because the air inside is warmer than the external atmosphere, and so sewer-gas, coal-gas, and indeed any other gaseous matter, may be drawn from the earth below into our habitations, and take the place of pure air. Foul air from cess-pools has been sucked into houses from quite a distance. The late Dr. Parkes attributed to emanations from the soil, attacks of cholera, dysentery, paroxysmal fevers, typhoid, and various forms of remittent fever. The catch-basin of every house, where there are sewers, should be ventilated through the down spout from the house eaves.

The amount of surface as well as of so-called ground water in the soil is of importance. Nearly all land has a current of water flowing under it, at a varying depth, and it may be stated broadly that the greater the depth of this ground water, the more healthy is the site. But as a matter of health, it is of greater consequence to attend to the surface water. Surface water collects chiefly on clay soils, or is stopped by a clay sub or under stratum, and rises, causing a moist surface. Inquiries instituted in England by the medical officer of the Privy Council, and conducted by Dr. Buchanan, went to prove that the prevalence of pulmonary consumption is in proportion to the dampness of the soil. Who can say after this result that consumption is not a disease which may be prevented?

The sum of the matter as to soils, then, is this: Unless in California, or some other equally dry climate, avoid "made ground" always if possible, but if this cannot be done, take care that the ground has been "made" at least two years, and the longer the better. When it is not a question of made ground, endeavor to choose a site with as little tendency to retain surface water as possible, with a deep run of ground water. These conditions, of course, indicate an avoidance of all clay soils, which are invariably damp and unwholesome, and of alluvial soils also, which, though porous, are mostly wet, and as a consequence more or less malarious. Gravel, the looser limestone formations, chalk, and, in some cases, loose sand with permeable sub-soil, are, in a sanitary sense, the best soils for residence locations. If, as will frequently happen, clay cannot be avoided, it is specially necessary to insist upon good trenching round the house, an impervious drainage system with steep grades, and foundations built up with cement or concrete.

It must not be forgotten, however, that the best soils may be speedily fouled by imperfect drainage. A loose brick, careless laying of pipe sewers, insufficient cementing, and, in fact, any sort of

bad workmanship under the house, will, in much less time than is generally imagined, so foul the surface soil around the house that the ground may be aptly compared to a big sponge saturated with sewage. It may be remarked as regards the power of retaining heat that (according to Schuebler), sand with some lime (speaking comparatively) retains the most, and fine chalk the least heat.

Situation—Few of our readers may be in a position to choose the situation of their dwelling place, but some hints may be useful, even if all cannot be acted upon. In a rural or suburban district it is frequently possible to secure a detached house. The slope of a hill is, perhaps, the very best situation, with trees in the immediate vicinity, but not close up to the house walls. The principal rooms should face south and east, or, as the next alternative south and west, care being taken that any neighboring houses built above the level of your own do not drain into your domain. In semi-detached houses, it is necessary to keep an eye on the sanitary arrangements of your neighbor, and it will be well if, in such matters, you can arrange to work together. As, however, sloping ground cannot be always secured, it is advisable that a house built on level or comparatively level ground should not, especially if low-lying, be situated close to a watercourse of any sort, for moist air as a matter of course is to be avoided. For purposes of health, flat grounds can hardly, under any circumstances, be overdrained. It is well to shun the close neighborhood of factories or mills, which even in rural districts often, and in many cases unavoidably, assist the pollution of the atmosphere as well as of the water in their vicinity. Above all things, in choosing a site, ascertain, first of all, that the supply of water is both good and abundant. In city districts, particularly those that are densely populated, sanitary arrangements with neighbors are difficult, if not impracticable. Avoid, under all circumstances, houses that are built back to back, and avoid unfinished suburbs, because the lighting, paving, drainage, and other matters are usually incomplete, and often dangerous. Open spaces should, under any circumstances, always exist at the back, and it is hardly necessary to remark that the shorter continuous rows of houses are the better. A garden, whether in town or country, is of course always advantageous. We may sum up the question of situation by saying, get as much air and light as possible, with an abundant supply of good water.

Construction—The external walls of houses are comparatively seldom built with requisite care, and an old enemy, damp, speedily attacks us. If there be an opportunity of looking after the building of the house, see that the foundations, and some feet beyond them, are laid in concrete. The basement story should be isolated from the surrounding ground by an open space, and, in order to prevent the admission of underground damp, a thin outer wall should be built, reaching the ground level, and leaving a space between it and the main wall. The porous nature of bricks is very

great, and Pettenkofer, one of the most distinguished German hygienists, has demonstrated the possibility of blowing out a candle through a nine-inch brick wall.

Walls should be built double, with an interspace, strengthened occasionally by cross-ties of brick. This will prevent to a great extent the bad results that follow from a driving rain, but it is always well to cover the outer walls with plaster or slate. It is very important to put ventilating brick at frequent intervals just below the level of every floor, so that the joists and other woodwork of both floor and ceiling shall be preserved from damp rot by continuous ventilation from without.

The style of architecture need not be discussed here, but it is necessary to remind the reader of the following points: 1. That light (and therefore plenty of window space) is essential to health; 2. That windows, for purposes of ventilation as well as light and cheerfulness, should reach almost to the top of the room, should face the south, southeast, or west, and open at the top and bottom; 3. That no sleeping room should exist in the basement. These are all important points in house construction. But to plan and build in a sanitary sense successfully, drainage, water-supply and ventilation, must be all considered separately and collectively. The chief error of house-building (as of ship-building), even in the present day, consists in the fact, that the house is built first, and rendered fit for habitation afterwards; that is to say, drains are put in here, ventilating shafts there, and outlet or inlet pipes anywhere, the result being, as a rule, by no means satisfactory. The size of bed-rooms must of course be governed by circumstances. Make them as large as practicable, but remember that each person should have, for purposes of health, at least 500 cubic feet of air, and as much more as can be given and with ample opportunity for fresh supplies.

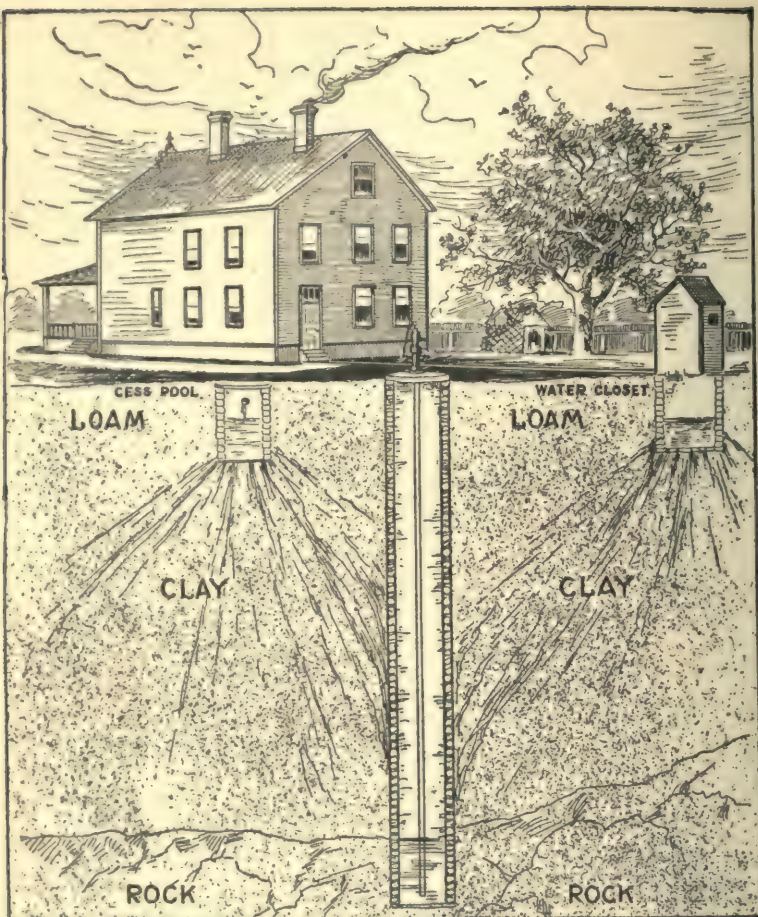
Danger of New Houses—One of the many errors which people who build houses are apt to commit is that of living in them, or rather suffering and dying in them, before they are sufficiently dry for occupation. It not unfrequently happens that a man, disgusted with the defective sanitary arrangements of the generality of houses, ancient and modern, builds a dwelling for himself and his family, constructed with all the latest improvements, and in his extreme anxiety to commence a career of longevity rushes into it before the workmen are out of it, and while the walls are still saturated with moisture. The consequences are, as might have been expected: in addition to the architect's charges, the rash owner is called upon to pay within the first few months a further bill to the doctor, and too often to the undertaker also. A house agent, not long ago, being asked why the house agency business was so commonly combined with that of the undertaker, grimly replied that the two "went together;" and on being asked for a further explanation, stated that he had found, as an almost invariable rule, that **when**, as a house agent, he found a tenant for a newly-built house,

he was applied to as an undertaker on behalf of that tenant or some member of his family within a twelve-month from the date of occupation. He added, that he himself (the house agent) would be sorry to live in any house "that had not been baked by six summer suns." Whether this amount of baking is absolutely required is a question for doctors and architects to decide; but there can be no doubt whatever that a want of caution in this respect leads occasionally to the most lamentable consequences. An instance in point will be found in the case of Peabody's Buildings, mentioned in the annual report of the health officer for Southwark, England, lately printed. It seems that these buildings have a death-rate of $23\frac{1}{2}$ in 1,000 persons living, or 1 in 43. In other metropolitan model buildings the death-rate only averages 17 per 1000. The less favorable state of health prevailing in Peabody's Buildings is attributed to their being too soon occupied after construction, many of the ground floors having been found to be still very damp some months after the buildings were inhabited.

We have purposely made these introductory observations as practical as they are brief. While it is true that not many of us can control the situation and all the surroundings of our dwellings, yet we can all do something, and surely we are bound to do all that we can, toward mitigating, if we cannot entirely remove, those baleful influences of disease and death by which so many families, in this country, are surrounded.

UNHEALTHFUL RESIDENCES.

One-third of your time is spent in bed and much more than that within the walls of your residence. No further argument need be advanced to prove the importance of having our houses conducive to health and not productive of disease. Because the punishment does not immediately follow after the offense people become indifferent about the unhealthfulness of their houses, but they may rest assured that nature will exact the due for natural law violated. Among the most common faults that make a home an influence to produce sickness, rheumatism, neuralgia, etc., may be mentioned low ceilings; doors without transoms; too small bed rooms without suitable provision for ventilation; rooms that the sun never enters, but where the doctors most always do enter; cellars where foul air enters because of lack of ventilation, to poison those who go down there, poison the food kept there, and send poisonous gases up through the house; cesspools and closets near the house which also at times send their noxious gases into the houses to do their silent mischief; unhealthful surroundings caused by location of house in a hollow. All these cause enormous suffering through disease and ailments of which they are direct preventable causes, and hundreds of millions of dollars paid unnecessarily to doctors and to druggists. It should be any one's first aim to secure healthful conditions in and about his home.



HOUSE, WELL AND WATER CLOSET.

This illustration shows the prolific cause of *many* of the diseases in the home. This seepage is carried into the well, and the result is disease and death. Frequent chemical analysis has proven that disease germs remain in the water even after it has passed through hundreds of yards of soil.

It is not necessary for anyone to ever use another gallon of impure or disease-producing water if they will expend with the tinsmith \$2.

Thousands of Lives Saved:—It will be seen on page 140 that for a trifling expense there can be saved annually thousands of lives. That usually the product of less than one day's labor will insure any man against any of these dangerous diseases. Adopt them without delay. Read carefully pages 57-63.

DIVISION FOURTH.

INFORMATION FOR EVERYBODY.

HOME COMFORT.

Comfort has been called the principal household god of the English people. "Home" and "comfort" are among the most significant words in the language. In countries where the air is genial throughout the year and where to bask in the sunshine imparts health and pleasure, the dwelling and its management may be matters of secondary consideration; but in England and the United States a comfortable home is of primary importance.

Home comfort is the result of managing the details of a household in the best manner, so that its machinery works smoothly, without jar or friction, and applying that which is sometimes called house-thrift. Wealth, though it can purchase luxury, cannot buy comfort. The rich, as well as the very poor, are often without real homes. When the spirit of domestic disorder or unthrift enters the door, whether it be of a mansion or of a cottage, all the good angels fly out of the windows; so, when the genius of good management comes within a household, comfort follows soon after, erects her shrine and distributes daily blessings to every member of the family.

It is remarkable that though the ambition to live comfortably is almost universal, yet very few realize their wishes. Those who have made their fortunes are wheedled into fashionable society, bound with silver chains, and delivered into the hands of that most remorseless taskmaster, called "social duty." The middle classes sacrifice comfort in their attempts to imitate the rich in their style of living and involve themselves in debt and its attendant vexations. Even among the working classes daily meals are often miniature banquets. Living to eat, rather than eating to live, the poor consume the nest-egg of independence and wonder that there is no increase of their store. An English manufacturer remarked that he could not really afford to buy spring lamb, green peas, salmon, new potatoes and strawberries for some weeks after his hands had been feeding on these delicacies.

A serious drawback to domestic comfort is ignorance of good cookery. In the princely establishments of Europe and the mansions of the wealthy, where a dinner is not merely a necessity, but

a luxury, all the great chefs of the kitchen are men. The Francatellis, the Soyers, the Blots, and the Gouffes, whose names are familiar on both continents, are simply by profession male cooks; but they are also men of genius, and deservedly take rank with artists, for it takes as much talent and thought to prepare a thoroughly good dinner as to paint a picture. In some homes of luxurious living the health of the chief cook is a curious matter of solicitude, because when he is sick he loses his taste and the dishes are liable to be badly seasoned and improperly prepared generally. Some enthusiastic gourmand recommends an employer to feel the pulse of his cook every morning, and examine his tongue, for he says if "the cook's palate is dull, his master will find the ragouts and sauces too highly seasoned."

In France, all classes, the men as well as the women, study the economy of cookery and practice it; and there, as many travelers affirm, the people live at one-third the expense borne by Englishmen and Americans. There they know how to make savory messes out of remnants that others would throw away. There they cook no more for each day than is required for that day. With them cookery ranks with the arts, and a great cook is almost as much honored and respected as a sculptor or a painter. The consequence is, as ex-Secretary McCullough thinks, that a French village of a thousand inhabitants could be supported luxuriously on the waste of one of our large American hotels, and he believes that the entire population of France could be supported on the food which is literally wasted in the United States. Professor Blot, who resided for some years in the United States, remarks, pathetically, that here, "where the markets rival the best markets of Europe, it is really a pity to live as many do live. There are thousands of families in moderately good circumstances who have never eaten a loaf of really good bread, tasted a well cooked steak, nor sat down to a properly prepared meal."

But in American households it is not the fashion for men to concern themselves with the details of the kitchen. The wife is the prime minister in the administration of the household, and within the limits of her jurisdiction her power over the fortune and well-being of her subjects is absolute. If she be ignorant of the arts of frugal management, or willfully extravagant, or carelessly indifferent, not only the purse but the health of the family will suffer. The wife is the central figure in the household, and the man's way to home comfort consists principally in getting a good wife, who knows the things worth knowing in household management, or is teachable and willing to learn.

Requisites of a Good Wife—A good wife, it may be remarked, is not a natural growth, springing from the soil without care or cultivation. Something undoubtedly is due to parentage and example, but in the main a girl is what she is trained to be.

First of all in the list of qualifications that fit a woman for

marriage, and above all others, may be placed good health. Life without health is a burden; life with health is joy and gladness. It is a fearful responsibility, both to men and women, to marry if they be not healthy, and the result must, as a matter of course, be misery. How needful is it, therefore, that all necessary instruction should be imparted to every young wife, and the proper means shown by which she may preserve her health.

TO PRESERVE HEALTH.—To maintain health, a young married woman ought to take regular and systematic out-door exercise, so far as it can be done without interfering with her household duties. Walking expands the chest, strengthens the muscles, promotes digestion, and exhilarates like a glass of champagne, but unlike champagne never leaves a headache behind. If ladies would walk more than they do there would be fewer lackadaisical, useless, complaining wives than we now see, and instead of having a race of puny children we should have a race of giants.

HOUSEHOLD VENTILATION.—To preserve the health of herself as well as of the family a married woman must attend to the ventilation of her house. Ninety-nine out of every hundred bed-rooms are badly ventilated, and in the morning after they have been slept in are full of impure and poisoned air. Impure and poisoned air, for the air in any room that is occupied becomes foul and deadly if not perpetually changed—if not constantly mixed, both by day and by night, with fresh, pure, out-door air. Many persons, by breathing the same air over and over again, are literally poisoned by their own breaths. This is not an exaggerated statement—alas, it is too true. For ventilation, open the windows both at top and bottom, that the fresh air may rush in one way while the foul air goes out the other. This is letting in your friend and expelling an enemy.

PERSONAL CLEANLINESS.—To preserve health a young wife should bathe regularly and thoroughly. "There is nothing," says Dr. Chavasse, "more tonic and invigorating and refreshing than a cold ablution. Moreover, it makes one feel clean and sweet and wholesome; and you may depend upon it that it not only improves our physical constitution but likewise our moral character. A dirty man has generally a dirty mind."

NOURISHING DIET.—To preserve health a woman should have a nourishing diet, and especially a substantial breakfast. She must frequently vary the kind of food, of meat especially, as also the manner of cooking it. Where a lady is very thin, good fresh milk, if it agrees with her, should form an important item of her diet. The meagre breakfasts of many young wives who eat scarcely anything is one cause, unquestionably, of so much sickness among them, and of so many puny children in existence.

SLEEP.—To preserve health a wife should have seven or eight hours of sound, refreshing sleep. Sleep is of more consequence to the human economy than food, and nothing should be allowed to interfere with it. And as attendance on large assemblies, balls and

concerts interfere sadly in every way with sleep, they ought one and all to be generally avoided. Rising at a suitable hour in the morning, not later than six in summer and seven in winter, is also recommended, as it imparts health to the frame as well as animation to the household.

AVOIDANCE OF STIMULANTS.—To preserve health it is necessary to avoid the use of alcoholic stimulants, except as a medicine. "It is surprising," says Dr. Chavasse, "the quantity of wine some young ladies, at parties, can imbibe without being intoxicated; but whether if such ladies marry they will make fruitful vines is quite another matter; but of this I am quite sure, that such girls will as a rule make delicate, hysterical and unhealthy wives. The young are peculiarly sensitive to the evil effects of over-stimulation. Excessive wine-drinking with them is a canker, eating into their very lives."

HOUSE DUTIES—A good wife is not only a healthy woman but one who thoroughly understands household duties. In Sweden, it is said, the daughters of wealthy families esteem it a privilege to be permitted to cook the family dinner; in France every woman can cook and hence good cookery is with them the rule, while with us it is far from being so. It is emphatically true, as Dr. Johnson remarked, that a man is in general better pleased when he has a good dinner upon his table than when his wife speaks Greek. But it is also true that a good housewife is, of necessity, a well-informed woman. She provides herself with a small but select library of books on Household Science, Domestic Economy, and Common Sense Cookery. The practical value of cookery books consists not so much in the instruction they afford to persons totally ignorant of the art, as in their suggestiveness to heads of households who do know something about it. A lady is puzzled how to vary agreeably and economically her day's bill of fare. She consults her books—and there are many good ones—and without slavishly following their indications, adapts them to her own tastes and circumstances. A skillful housekeeper with only half a hint will improvise pleasing culinary novelties—novelties, that is, to the habitual diners at her own family table, whereas without the hint she might go plodding on in a wearisome routine of roast, boiled, and cold until all were tired.

DOMESTIC ECONOMY—A good wife not only knows the details of household duties, but the secret of economical management. There are many women who have the disposition to make the house a home, and succeed tolerably well provided they have plenty of means, but in management are inordinately extravagant. They throw away as remnants what would suffice a good cook for a meal. They cook more than is required and allow the surplus to spoil. They spend the time in making iced cakes which should be devoted to making good bread. It has been said of American women that there are more who can furnish you with good ice-cream than a well-

cooked mutton-chop. A fair charlotte-russe is easier to get than a perfect cup of coffee, and you will find a sparkling jelly for your dessert when you sigh in vain for a well-cooked potato. They forget that it is a thousand times better to be able to do a common thing well than an uncommon one tolerably.

CHEERFUL DISPOSITION—A good wife also cultivates cheerfulness and placidity of temper and disposition. Nothing disturbs digestion and consequently injures health so much as a fretful, easily ruffled temper. "Our passions," says Dr. Grosvenor, "may be compared to the winds in the air, which, when gentle and moderate, fill the sail and carry the ship on smoothly to the desired port; but when violent, unmanageable and boisterous, they grow to a storm and threaten the ruin and destruction of all."

TO WIVES.

WHY HUSBANDS SEEK OTHER ASSOCIATIONS.

The causes of disease are legitimate inquiries for a medical treatise. Domestic infelicity, standing prominently on the list, as a cause of the physical ills of humanity, demands something more than mere passing mention. How to continue the love the young wife has inspired, and how to maintain the regard and affection she has won, are very important inquiries for her, though they are often sadly neglected. Wives are too prone to require love and admiration, while they are entirely regardless of the performance of those duties which inspire affection and esteem. Love without reciprocity cannot continue.

This fact should always be borne in mind: That love, affection and esteem are not matters of choice. We cannot control them any more than we can control the elements of the air. They come and go according to merit. At any time, when the wife discovers that the affections of her husband are subsiding, she should closely examine her own course; for it is possible that the fault lies with her. Perhaps there is a perversion of those qualities on which were based his earlier love and esteem, which have been supplanted by those which are coarse, uncouth and repulsive. If she has practiced deception, suppressing her real disposition and character, as is sometimes the case, from her earliest acquaintance with her husband until after marriage, when she permits her real disposition, in its irritability and grossness, to again appear, it cannot but reasonably be expected that the husband's regard and affection will rapidly subside. Merit attracts love and esteem, and these are repelled where it does not exist. For an individual to demand affection and admiration, when they are not due or merited, is requiring that which it is an impossibility for human nature to render. As well require one to take gall, and demand that it be to him sweet and savory. One very prolific cause of the alienation of the

affections of the husband is immodest and obscene language and unlady-like deportment of the wife. Words and acts, which are regarded as indelicate and unbecoming in the presence of others, should be equally so in the presence of her husband alone. If there is one individual before whom proper actions and pure and choice language should be employed, that person should be the husband. Ladies not infrequently make the remark that, before marriage, their husbands were very zealous and attentive; but long since this has changed. Very true. And how unmindful of the fact that, doubtless, their own demeanor has likewise changed; that before marriage, perhaps, they were models of propriety and elegance; but, having changed in these matters, a like change has been wrought in the husband. No woman should be unmindful of the fact that, in consequence of conventional rules and education, we are led to look for and expect more of the chaste and refined sentiments in woman than in man; therefore, that which is pardonable in him in this respect is not in her.

Inconstancy—Vicious and lewd men have admitted that their first inconstancy to their married vows arose from their disgust at home; and yet, perhaps, the same state of affairs existed with those to whom they fled; but ignorance of this fact was bliss to them.

Unpleasant Home—If the home of the husband is one where he is accustomed to meet with reproaches and complaints, or if it is one of sullenness and gloom, he is liable to avoid it as much as possible and seek elsewhere for solace and pleasure that are denied him at his own house. If there be observed, at any time, a disposition on the part of the husband to pass his leisure hours away from home, you may suspect that you have rendered your presence offensive and undesirable, and your surroundings disagreeable. In order to reverse this order of affairs, learn his tastes, study his former habits, cultivate them and assimilate your own to them. The husband is as the wife makes him. She holds the key to the problem of his future and it is in her power to make him the perfect man her lover eye's saw him before her marriage, if she only studies his character and moulds him aright. Cultivate a more cheerful disposition; adopt habits of neatness and order in your household affairs, strict tidiness of person, and an inclination at all times to familiarize yourself with those subjects in which your husband is most interested, in order to be entertaining and better company for him.

Health in the Home—Another matter of prime importance is health in the home. Healthy people are more attractive than the sick or feeble, and a sick-room is not a pleasant resort for husband or wife either. When sickness does unavoidably assail you, delegate to your nurse special supervision of your person and your room, and have all duties promptly and strictly attended to, and admit your husband to your bed-side only at times when affairs are properly arranged. Try to be neat, tidy and presentable.

In conclusion, we would say that those wives who incorporate the foregoing suggestions into their domestic life will seldom have occasion to charge their husbands with infidelity to them. Besides, the health of both parties will thereby be very much promoted, for domestic infelicity invites disease.

To make Home Pleasant—Endeavor to make the home of your husband pleasant and alluring. Let it be to him a haven of rest, to which he may turn from the weary trials and vexations of business. Make it to him a repose from care; a shelter from the outside world; a home, not for his person only, but for his heart, where he may find his greatest comfort. Should he be, at times, discouraged and dejected from the battles of life, soothe and comfort him. If his difficulties or ills make him petulant, soothe him; enter feelingly into his vexations, make his trials your own, and thus arm him to fight the battle for both. Make due allowance at these times for the frailties of human nature. As a wife, you should lend a helping hand in his struggles for the maintenance of the household, as much can be done in the domestic economy to lighten his burden.

TO HUSBANDS.

WHY WIVES BECOME UNFAITHFUL.

If a husband be indifferent as to his wife's affection for him, let him become obscene in his language, coarse and uncouth in his manners, and especially toward her, and he will soon accomplish the object of dampening the ardor of her love for him. And let there be coupled with this the intemperate use of spirituous liquors and he can scarcely fail to quench the last embers of her affection for him. The husband who is guilty of these indiscretions should not demand nor expect the regard and love that are ordinarily due from the wife to the husband; for they have been justly forfeited. If she be a sensitive, affectionate woman, she may regret the loss of affection as much or more than he, and it may have caused her many an hour of sorrow and anguish of spirit. Nor is this all; if the husband is continually meeting his wife with reproaches or allowing himself to be irritable in his intercourse with her, can he expect to be recompensed with fond affection? Scarcely, if his wife were an angel from the abodes of heaven. For the husband, through indolence and negligence, to fail to provide his wife and family with the necessary comforts of life, is another course that tends to alienate her affections. And should he at any time have reason to suspect her fidelity to him, he should carefully scrutinize his own actions, for some one or all of the above causes may have been the chief factor in bringing about this deplorable condition of affairs.

Every husband should extend towards his wife a certain degree of liberality; let her have money to make her various little

purchases, without always being compelled to call on him and make pressing solicitations for it; as this is very unpleasant for her and not a desirable task for anyone. Every reasonable and liberal husband should and will accord to his wife the same rights and privileges he himself exercises. He usually goes from home and returns at will, as business or pleasure may demand. And has he any natural rights in this respect which she does not possess? If the husband is animated by any of the true spirit of human kindness and liberality, he will no more ask or demand that the wife be eternally domiciled within the walls of home than he would thus himself consent to be immured.

We find a husband making investments at will, even to purchasing houses and lands, without consulting the wife. Should he not, then, accord to her the privilege of making her own little personal and household investments without incurring censure? We have not infrequently observed cases in which, if the wife only made an investment of the most trifling article, even if it were but an item of literature, as a book or magazine, she subjected herself to reproach. The right course is, when it is not inconvenient, for wife and husband to consult in matters of contemplated purchases. This is especially the case when their means are limited or pecuniary embarrassment exists. Mutual confidence induces mutual respect. For further remarks on this subject, the husband's attention is invited to the article addressed to wives, where he will find many observations that are likewise applicable to himself.

THE APPETITES.

Frequency of Indulgence—On this subject it is impossible, with propriety, to lay down any certain rule; since much must depend upon the temperament and health of the individual. As some require, and may safely take, more food and drink than others, as we all know from experience and observation, it is plain that a measure of indulgence quite safe and innocent in one case would be wrong and dangerous in another. In this respect, it is proper that every one should understand and govern himself. "What and how much must I eat? And what and how much must I drink?" are questions frequently asked of the physician, in reply to which he can lay down no inflexible law. Much will depend upon the constitution, and more upon the habits of the individual. Nature, however, dictates—except in special cases—that we should eat and drink as long as we are hungry and thirsty; and this, perhaps, as a general statement, is a good, safe rule for the regulation of our indulgence of these particular appetites. But the most important, by far, of all our natural appetites is the sexual; and the proper limit of indulgence here is still harder to be defined. Not only does it depend, like those already named, upon the temperament, health

and habits of the individual, but it is almost infinitely complicated by the necessary introduction, here, of the element of mutuality; and the importance and difficulty of its solution are further enhanced by those terrible consequences to health and morals which result both from excessive and from insufficient gratification. There is little doubt that almost, if not quite, as many dangerous and lifelong diseases spring from the latter as from the former, and that undue privation is a powerful stimulus to the most alluring of all those temptations to vice which assail humanity.

Some sound and prudent counsel, on this subject, is perhaps as much as should be ventured here. In the first place, it should be observed that, in this respect, there is a great difference between the sexes. Men are much more amorous than women. Their passions are stronger and more irrepressible; and besides, while in health, they are almost constantly active and capable. It is not so with women; they have states and periods when they are strong and able, and others when they are weak and powerless. Some have even a settled aversion, approaching to disgust, for what they deem the lower and baser pleasures; and others are only reconciled to them occasionally and at intervals. Yet we should say, that it is the wife's duty, and her interest as well, even in these cases, to comply with the reasonable wishes of her husband. If she have no active and passionate sympathy with certain of his moods, she can at least be passive and complying; and so much the easier will this be, if she love him and desire to prevent those injuries to his health and morals which may possibly result from her want of sympathy and kindness. So much, by way of counsel to the wife in these most difficult and doubtful cases; yet we present it with extreme diffidence, and only for the temporary relief of those whose husbands have not yet learned the higher and better way; for such a way there is, and we will endeavor to point it out in this article.

True Marriage—True marriage is a state in which, above all the other sentiments, mutual tenderness should prevail; and, when this feeling rules, there is no danger of either discord or excess; because each will find the highest pleasure and happiness in subordinating his own wishes to those of the other. It is this divine fire which softens and melts into an indissoluble unity the hardest, the most inharmonious, and even the most opposite of natures. This union once accomplished, all the rest of good and desirable follows as a matter of course. The more fiery and passionate nature is subdued and quenched in its calm waters, and the colder, slower and more phlegmatic one is aroused and stimulated to passion by its heat; and thence there results a sympathy so perfect and sweet that it doubles all their mutual pleasures, while it so restrains and moderates desire as to forbid all injurious excess. This in effect, is the meaning and the end of marriage. Those who consider merely its procreative function, take altogether too low and degrading a view of the subject; since it is obvious that this pur-

pose could be accomplished, with equal or greater success, by other means. It is rather for the refinement and elevation of both its parties; that the one, in whom passion is dangerously and injuriously predominant, may be toned down to temperance, and that the other in whom passion is dangerously and injuriously deficient, may be toned up to enjoyment; so that of this union there may be born, not the greatest number of children, but the highest and most finished types of human childhood. In such a marriage, it is plain that the appetite of which we are speaking will always regulate itself well and wisely; for the very condition of its existence and urgency rests in the fact that it is both spontaneous and mutual. A good husband would as soon think of inflicting any other sort of torture upon the object of his tenderest affection, as to worry her with solicitations and importunities for that to which she had no inclination of her own; and a good wife, who should thus be made to know that the crown and seal of her husband's happiness depended upon her active and voluntary sympathy with his wishes, would be as capable of denying food to the hunger of her heart's idol, as of failing in the generous warmth of her response to his feelings in this respect.

False Marriages—It follows, by immediate, natural and necessary consequence, that all marriages, so called, in which this sentiment of mutual tenderness does not prevail, are not true and real marriages, but merely false and seeming ones; and that the intercourse of such persons is not much better than a legalized prostitution. For how much better is the woman who reluctantly and unsympathetically submits to the embraces of a husband, because he furnishes her with a home and luxuries, and has thus purchased the right to her person, than the degraded creature who, for a similar consideration and without the sanction of a violated vow, submits to the same thing? And how much better is the other party—the man—who can thus brutally claim and use his wife as a purchased possession, because the law gives him the right to her, and it is “so nominated in the bond,” than the wretch who outrages the moral sense and good order of society by his kept mistress, or his habitual visits to the dens of prostitution? That the children of such parents should be born vicious and depraved, can be no matter of surprise to those who have properly estimated the base ties by which their fathers and mothers are held together. Indeed, it could not be otherwise, in accordance with the laws of Nature and of God. The first effect of these unions—falsely called marriages and well named, by the French, marriage *de convenance*, marriage for convenience—is, of course, the excessive indulgence of the sexual appetite. The husband has purchased and brought home, and why should he not take possession of, the trembling and shuddering bride? He does. Her sensations, it is true, are those of unmitigated and immitigable loathing. Whatever native capacity for love and the pure and delightful offices of marriage she possesses is slain—murdered outright

—on the very threshold of this hideous union. She submits, because she must; but she submits as to an outrage; and no gilding of respectability can render it otherwise than hateful to her eyes. And when, at last, wearied and disgusted with his own excesses, her owner leaves her in peace, it is like the peace of the damned. She weeps bitter tears of mingled humiliation and indignation, and wishes she had never been born; or, at least, that she had never been married. Such has been the experience of thousands of miscalled wives, who, if the truth could be told without shame and disgrace, would confess that they look back, even from the distance of years, to the occasion of their marriage, with feelings of horror and disgust.

Happiness for the Mismatched—It results from this, that the condition of true and real marriage is, an omnipresent mutual tenderness; and that, wherever this condition is wanting, either permanently or occasionally, there is not, and cannot be, any true marriage, and the relation passing by this name is essentially vicious and criminal and calculated to produce all manner of evil effects. So long as this state of things continues, there ought to be no other intercourse between such persons than that which is implied in the offices of common and friendly politeness. Standing thus apart, on the high ground of mutual forbearance and reserve, there is some reason to hope that time may heal the wounds inflicted by former errors, and may beget in each a sentiment of growing kindness, which will at length deepen into that feeling of mutual tenderness which can alone unite them in a happy and indissoluble bond. But it should never be forgotten, that the attitude of mutual reserve, of which we have spoken above, is the first step to be taken by those who would pass from a state of sexual intemperance and conjugal discord, to the high and holy plane of such a marriage as will not only regulate appetite, but throw around its indulgence the sweetest and purest of charms.

The second step is a little harder to describe, though it will not be found so difficult of performance, perhaps, on the part of those who sincerely undertake this reformation, as was the first. It consists in a voluntary direction of the attention, on the part of each, to those traits of person, habit and character in the other, which are most amiable, attractive and winning. The man may recall and remember the charms of the maiden, the dewy freshness of her bloom, the sweet grace of her attitudes and the whole bright picture of her person and presence when these dawned upon him like a revelation and threw over him the glamour which made him desire and seek her for his wife. He may think of her first coy and yielding consent to receive his love, of the moment when she first confessed a mutual passion, of her growing tenderness under the influence of courtship, of all that she gave up and sacrificed for him, of the bright hopes with which she entered life, hand-in-hand with him whom she had chosen out of all the world to be her husband and her dearest friend forever; of the trials, crosses and disappoint-

ments which he knows have fallen to her lot in that marriage which she dreamed would be all love and happiness; of her patience and long-suffering; of how much and how vainly she has striven to please him and make him happy; and how, if she has yielded at last to sullenness and vituperation, it has been only under the force of the hardest trials and the strongest provocations. All this he can recall and dwell upon, until his heart grows warm and tender under the magic touch of memory, and he is ready and willing to enter upon a new and better life.

For her part, occupying that ground of reserve which has been indicated above, the wife may as profitably pursue a similar course of reflection. She may recollect and linger over all those qualities in her husband which attracted her youthful fancy and first kindled in her heart the fires of affection. Looking through the faithful glass of memory, she may see him as she saw him then, when he seemed the realization of all her hopes and the fulfilment of her fondest dreams; when a life-time union with him seemed to promise a reality to her brightest and sweetest dreams of future bliss; when, young, ardent and aspiring, he was the hero of her idolatry and the god of her fond worship; and when he first wooed and won from her the earliest and sweetest tokens of her maiden love. Thus, softened by these memories, to a mood of kind and gentle indulgence, she may recall all his later kindnesses; how faithfully and honorably, by days and nights of toilful assiduity, he has secured her against all the discomforts of penury; how patiently he has borne with her many perverse and unamiable moods and tempers; how often her coldness and repulsion have chilled and rolled back the ardent current of his tenderness; how little she has sympathised with his plans and aided him in his endeavors, while his great object has been to build up for her a royal home, of which she might be the lovely and honored queen, whose tender and loving despotism should make the music and glory of his life; how, instead of cheering him on in this exalted task, she has discouraged and dismayed him, by her fretful and peevish moods, until he has almost lost heart for that work upon whose successful prosecution the honor and happiness of both their lives depend; and how, through all, in spite of all and above all, he loves her still, and would fain find in her, if she would let him, all the missing harmonies of his life. Such recollections will bring back to her eye the brightness, to her cheek the bloom, to her step the lightness, and to her heart the tenderness of the olden time; and ere she is well aware of what has taken place, he will have grown unspeakably dear to her, and she will be ready to welcome and crown him king of the long vacant throne in her heart.

Between these prepared souls and their true and final wedding, the obstacles which remain will be easily and naturally overcome. They will consist, first, of some painful and bitter memories; secondly, of some natural doubts and fears; and finally, of that barrier of

habitual reserve, which, by mutual consent, they will have built up between them, and which they will be half reluctant to see destroyed, because—if for no other reason—from its summit they have obtained a Pisgah-view of the “promised land” of harmony and happiness. But the rising flood of mutual tenderness will drown all these painful memories; their doubts and fears, like night-birds, will flee from the approaching dawn of love’s bright day; and the ice of reserve will melt before the touch of hands, the glance of eyes and the beat of hearts throbbing, glowing and burning with a mutual passion of tender affection. The hands will learn to linger in a tender clasp; the eyes will “look love to eyes that speak again;” until, at length, some sweet moment’s irresistible yielding to the impulse of mutual tenderness will tell the tale, and they will fall weeping into each other’s arms, with hearts re-welded forever. Then, for the first time, they will taste real bliss, and wonder how it was possible that they could have failed, so long, to find that heaven of mutual, tender and forbearing love, which all the time stood open to their entrance, and which, now that they have found it, they would sooner part with life than lose.

In all this there is no extravagance. The happiness of this state, whether found early or late in life, is a thing which cannot be exaggerated. It is simply indescribable, because it is more, better and higher than earth has language to convey or thought to image forth. In fact, there is neither name nor symbol for the happiness which man and woman, united by a bond of mutual tenderness, can and do impart to each other. It is simply sweeter, purer and higher than imagination can conceive, or anything save experience believe. It is the infinite, holy and perfect mystery of existence, into which whoever enters will never say that, with all its sorrows and disappointments, life is sad. And, if life holds a greater mystery than this blissful one, it is this; that any soul, privileged to enter here, should stay without; that so many so-called married persons should live, for years, upon the threshold of this heaven, and die without ever once having passed within its open gates. It can be only because they are blind and cannot see them; and if, in this article, we have said anything which may help to open their eyes, we shall be glad.

TO AVOID EXCESSIVE INDULGENCES.

Married persons should adopt more generally the rule of sleeping in separate rooms, or at least in separate beds, as is the almost universal custom in Germany and Holland. This rule being adopted, several very important advantages would result in regard to health and comfort.

Opportunity makes importunity. For example, if pastries are where they continually attract the attention of children, there is a want



FAMILY BED ROOM.

Who should and who should not occupy the same bed. Both health and life involved in this matter
See page 79.

and a request for them ; but if out of sight they would only be thought of when natural hunger came. So, if married persons slept in different rooms the indulgences would only be specially thought of when there existed a natural, healthy appetite for the same, and as food is the more enjoyable from the longer interval of fasting; so here. In this way troublesome temptations are escaped and a rational temperance would be practiced without inconvenience.

And it is well known, too, that if two persons, one sickly and the other healthy, occupy the same bed, one will become diseased without the sickly one becoming benefited. This is especially true when children sleep with old and feeble persons. Hence, it is seldom the case that both the wife and husband are in perfect health, in all respects, at all times ; at least one party would be saved from injury by sleeping alone.

When two People may Sleep Together Advantageously.—Two people may often occupy the same bed to the decided benefit of both. For instance, when one is by nature full of positive electricity or magnetism, while the other's body is negative. In this case there is an insensible and gradual interchange of vital currents. The excess of positive goes out to the negative body, and it in turn gives of its over supply of negative to the positive body, and thus a normal and healthful condition is brought about. This must be the explanation of the numerous instances where a weak and semi-invalid woman marries a man not considered unusually strong, and both become healthier and able to endure far more than either could before marriage. Each gives to the other without losing any essential part of themselves.

HOW CHILDREN ARE BORN EITHER BRIGHT OR STUPID

Nearly all writers admit the power of ante-natal impressions. The effects, upon offspring, of the mother's fright during pregnancy are well known, and they are often supposed to result in the permanent deformity or idiocy of the child. These effects are frequently seen in what are called birth-marks. Equally potent, and frequently to the more observing equally patent, are the effects of loving and loathing, and the continued presence of sights hateful or agreeable to the mother. Upon these and like observations has been built what may now be called the Science of Ante-natal Education or Training. *There no longer remains any doubt that children may be born strong or weak, beautiful or ugly, talented or imbecile, good or bad, according to the will and wisdom of their parents. What would not a parent give to have his child mentally bright and physically handsome? Why, it could not be estimated in dollars and cents!*

This article should be read and studied by every parent, as none can afford to be without the information imparted here and on pages 343 to 348, Vol. I.

We should give to this the highest and most important act of our lives, whose consequences may extend to future

generations, a corresponding degree of care and painstaking. For this purpose, we should be in the highest and strongest physical health and vigor of which we are capable; and to secure this state, we should take that amount and quality of bodily exercise which are best calculated to produce it. At the same time, our mental faculties should be in their highest and most active condition. Then, the sentiment and passion of mutual love and attraction should be at their strongest, and the hour selected should be that time of the day when our whole nature is in its fullest force and highest vigor; this is not at night, when we are exhausted by fatigue, nor on waking in the morning, before our faculties are fully aroused.

Subsequent to conception, and before the birth of the child, much may be done by the mother for its future character and development. During the first four or five months of pregnancy, while nature is laying its foundation and framework, so to speak, of the future man or woman, the mother may contribute not a little to the strength and hardihood of her child's constitution, by the faithful practice of a suitable system of exercise and regimen. Later, in the sixth and seventh months, when the brain is being formed and matured, she may stamp it with the very quality of her own tastes and pursuits. Surrounding herself with beautiful and cheerful objects, communing much with the best books and the most gifted minds, hearing the most eloquent speakers and living in the worlds of literature and art, she may give birth to a genius who will astonish the world and delight her own heart; or, reversing all this and giving her attention to the mean and the sordid, the effect will be seen in the lower and more incapable mental qualities of her offspring. As she sows in this season, so will she reap in the harvest-time of maternity.

Finally, the temper and character of her child will depend very greatly upon her own, especially during the last months of her pregnancy. Here and now she becomes almost omnipotent. Patient, serene, content, gentle, pure, unselfish, cheerful and happy, the sunny being that will be born of her will brighten and gladden all her life; while, if fretful, turbulent, discontented and unhappy during this period—and much more if she be positively vicious—she need not be surprised if she give birth to a public and private pest, that will break her own heart and be a curse to society. Nothing is now more certainly known, or better understood, among those who have given attention to this matter, than this potential effect of the moods of the mother upon the character of her child. If then she would see her children strong and healthy, graceful and beautiful, quick, sprightly, intelligent and gifted, cheerful, obedient and happy, virtuous and respected, the ornaments of society and the lights and jewels of her own heart and home, let her give heed to those immediate laws of ante-natal influence, some hint of which may be found in what we have said above.



JAMES RUSSELL LOWELL, M. D.

PARENTS CAN HAVE THEIR CHILDREN BORN WITH NOBLE GIFTS.

On this subject Dr. Lowell wrote: "Previous to the conceptional period more can be done for the coming child than can afterwards be done in years of school or college."

This is the time to endow the coming child with intellectual capabilities—imparting to it either brilliancy, mediocrity or stupidity."

The law that brought into being, from among the common ranks of life, such men as Benjamin Franklin, Lincoln, Bismarck, Gladstone, Napoleon and hundreds of other gifted individuals, will do the same for all who comply with the simple, natural law.

Nature never works by chance. "The God of nature works through eternal law."



L. P. ELDREDGE'S FIRST CHILD.

L. P. Eldredge of Brooklyn, N. Y., states: "Neither my wife nor myself, previous to the conceptional period, nor during the next nine months, the period when the future child is fashioned or moulded with its mental faculties and other endowments, gave any attention to the effects that would be produced on it. But in the case of our second child, we did, and the result was a bright and intellectual child."



L. P. ELDREDGE'S SECOND CHILD.

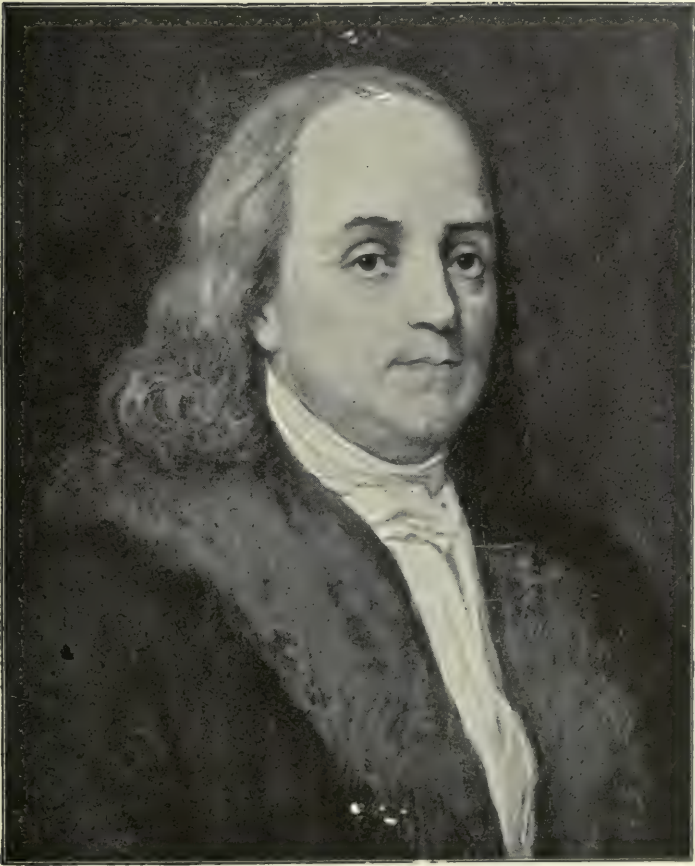
It has been fully tested and proven that children may be born talented or imbecile, with cheerful dispositions or gloomy ones, with kindly natures or harsh and sour ones, according to the will and wisdom of their parents.

Every one raising a family should read and carefully study the article on page 79.

GIFTED MEN.

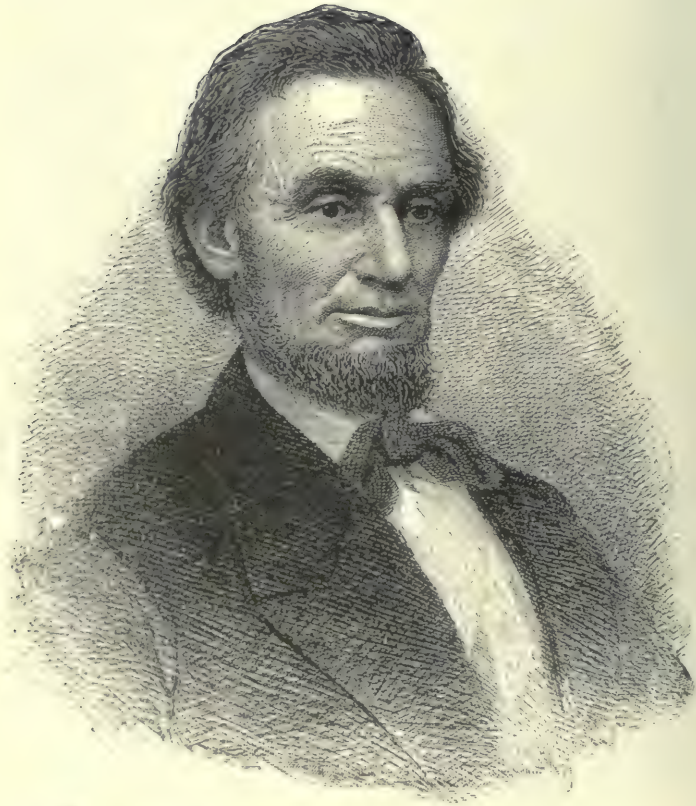
Parents who desire their children endowed with abilities such as the noted men illustrated on the following pages need only inform themselves and act accordingly. Grandparents, too, may be blessed with strong, healthy, brilliant grandchildren, if they will place in the hands of their sons and daughters the means of information. (See pages 79-91.)

More can be done at the period of time here indicated than can be done afterwards in years at college.



BENJAMIN FRANKLIN.

His parents belonged to the ranks of the common people.



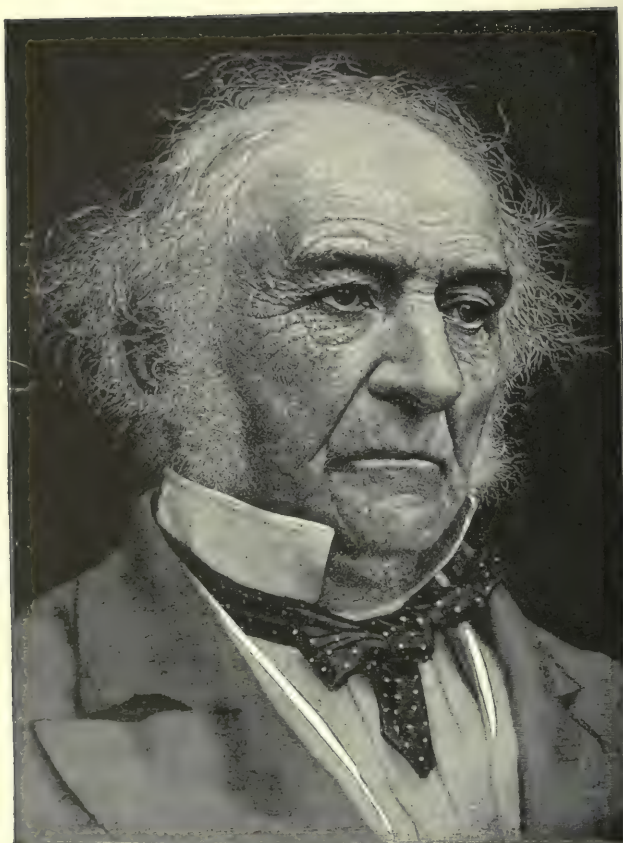
Yours friend & ever
A. Lincoln

Born in a log cabin, he became the most famous leader of his times



OTTO VON BISMARCK.

His parents were plain people, unknown to fame.



W. Gladstone

The "GRAND OLD MAN" was a merchant's son



NAPOLEON BONAPARTE.

His parents were poor, plebeian but ambitious Corsicans.



G. A. Grant

Born in obscurity, he became a renowned commander.

CONCEPTIONAL PERIOD.—Parents who desire exceptional children can have them, but they must prepare before the period of conception. The repose of mind as well as the physical and mental purity of the father and the reading of good books immediately begin to modify the character of the seed constantly being formed in his secret parts. As *he* then is, so will *that* soon become. Likewise the mother, with pure and lofty thoughts, stimulated by reading the most noble books, influences at once the then ripening product of her ovaries. (These are constantly ripening and being discharged.) So intimate is the nervous connection between brain and secret parts that the condition of one is immediately apparent in the other. If the prospective parents desire offspring of a certain character let them first prepare themselves for some weeks before any sexual union, and let the hopeful mother continue throughout her entire period “pondering these things in her heart,” as did Mary, the Mother of Jesus; and as sure as God’s eternal truth the results will be marked and effective on the coming child. See page 131.

AIR AND VENTILATION.

Impure Air.—The impurities of the air may be ranked under two heads: gases, and matters held in suspension. From the soil are wafted into the air particles of every substance it contains. Near the dwellings of men, particles of carbon, hairs, fibres of cotton and woolen fabrics, etc., abound. The vegetable world contributes seeds, spores, germs, pollen and light floating bodies. From the animal kingdom there are also germs and particles of worn-out tissues. The organic vapors arising from the decomposition of animal and vegetable products have hitherto baffled man’s attempts to discover their precise chemical constituents, and a similar obscurity attaches also to the organic substances known as the specific virus of contagious diseases. These all deteriorate the air.

Air Vitiated by Breathing.—In the process of breathing, the air loses a third of its oxygen, the life-giving principle, and receives in exchange carbonic acid gas, a gas not only incapable of supporting life, but actually destructive of it. Such is the change effected by the simple act of breathing, and if this process goes on in an ill-ventilated room where there are several human beings, the carbonic-acid gas accumulates, usurps the place of the oxygen consumed, and so renders the air less and less fit to support life. Carbonic-acid gas cannot support combustion; hence a lighted candle partially or completely surrounded by it burns slowly or goes out. And so it is with human beings; when more or less completely enveloped in an atmosphere charged with this gas, all the functions of the body are tardily and imperfectly performed, the muscular tissues are enfeebled, the breathing becomes oppressed, the head aches and in extreme cases life is extinguished amidst sufferings of the most distressing nature. The fact can scarcely be too strongly stated that proper

ventilation cannot be had without a way for the egress from the upper part of a room of the impure air, and provision in the lower part for a sufficient supply of fresh air from the external atmosphere. In the greater number of dwelling-houses no direct provision at all has been made for this purpose, and the only ventilation obtained is due to the imperfect fittings of the windows and doors. The floors are covered with carpets, the windows and doors made as impervious as possible to the air, and in the ceilings no apertures exist for the escape of carbonic-acid gas. From this all classes of the community suffer almost equally.

Airy Sleeping-Rooms—The fact that carbonic acid gas endangers health and life shows the importance of making provision for its uninterrupted removal from our houses and places of assembly, and above all, from our sitting rooms and sleeping-rooms. Airy, well-ventilated sleeping-apartments should be ranked with the most important requirements of life, both in health and disease. Bed-rooms, in which about one-third of human existence is passed, are generally too small, and are crowded and badly ventilated. The doors, windows, and even chimneys, are often closed, and every aperture carefully guarded so as to exclude fresh air. The consequence is, that long before morning dawns the atmosphere of the whole apartment becomes highly injurious, from the consumption of its oxygen, the formation of carbonic-acid and the exhalations from the lungs and the relaxed skin. In an atmosphere thus loaded with effluvia the sleep is heavy and unrefreshing. There are some diseases in which the cause of death is simply the accumulation of carbonic-acid gas in the blood; and this condition is brought about to any person in some degree, in every badly ventilated bed-room. If provision were made for the admission of fresh air and the escape of impure air the sleep would be lighter, shorter and more invigorating. In most cases the door of the bed-room may be left open, and the upper part of the window let down a few inches more or less according to the state of the weather—with perfect safety. Currents of air may be kept off the face of the sleeper by placing the bed in a proper situation, or by suspending a single curtain from the ceiling. During thick fogs or severe winds the out-door openings may be closed, and ventilation secured from the adjoining hall.

The importance of the subject is very correctly and very strikingly put by a medical writer of the last century: "If any person will take the trouble to stand in the sun and look at his own shadow on a plastered wall, he will easily perceive that his whole body is a smoking mass of corruption, with a vapor exhaling from every part of it. This vapor is subtile, acrid and offensive to the smell; if retained in the body it becomes morbid; but if re-absorbed, highly deleterious. If a number of persons, therefore, are long confined in any close place not properly ventilated, so as to inspire and swallow with their spittle the vapors of each other, they must soon feel

its bad effects." Unpleasant as it is to dwell on such a subject, it is yet true that the exhalations from the human lungs and skin, if retained and not diluted with a continuous supply of oxygen (the active agent in all disinfectants), are the most repulsive with which we can come in contact. We shun the approach of the dirty and the diseased; we hide from view matters which are offensive to sight and smell; we carefully eschew impurities in our food and drink, and even refuse the glass that has been raised to the lips of a friend. But at the same time we resort to places of assembly and draw into our lungs air loaded with effluvia from the lungs and skin and clothing of every individual in the promiscuous crowd; exhalations offensive to a certain extent from the most healthy individuals, but, rising from a living mass of skin and lung in a state of disease and prevented by the walls and ceiling from escaping, injurious and repulsive in the highest degree.

Ventilation Essential—The great practical inference is, that the only means of preventing persons from poisoning themselves and others is to insure their being constantly surrounded by fresh air; otherwise, low fevers may result, and such acute diseases as scarlatina, measles, small-pox, etc., may be excited in epidemic forms, often marked by malignant symptoms. The air of an apartment containing several human beings, if unchanged, not only becomes charged with carbonic-acid gas, but also, as before stated, impregnated with animal particles which fly off from the skin and lungs, so minute as scarcely to be detected by the microscope, which taken by the breath into the lungs may be absorbed and develop the worst forms of scrofula and consumption. But if these particles are given off from persons affected with or recovering from small-pox, scarlet fever, whooping-cough, typhus, etc., they will exert a still more injurious influence upon the health, and probably generate again the diseases from which they emanated.

Ventilation of Schools—The sanitary arrangements of many schools are notoriously bad. The buildings used for such purposes are often unsuitable, and in space and windows very inadequate. This applies often both to the school-rooms and the sleeping-rooms, which are over-crowded and badly ventilated, causing loss of appetite, headaches and general delicacy—effects often attributed to overwork, but in reality due to want of fresh air. Parents should always inspect the rooms and ascertain their size, the position of the windows and fireplaces and other facilities for ventilation, with the average number of occupants. A rough but suggestive test of the ventilation of a school-room may be secured by entering it after it has been occupied some two hours, and comparing the difference between the air of the room and that out of doors.

Badly Ventilated Churches, etc.—It is important to remember that an assembly in an ill-ventilated church, court of law, school-room, theatre, ball-room or evening party may include some

yet unsafe convalescents from the contagious diseases previously mentioned. The only security we can suggest is, as far as possible to avoid all places of public resort or private gatherings in which the most ample provision is not made for the admission of fresh air and for the uninterrupted escape of air spoiled by carbonic-acid gas or animal exhalations. In the section on small-pox it will be seen that in a recent epidemic the greatest success attended the treatment of patients absolutely in the open air in mild weather, and with the windows and doors constantly open, day and night, in the coldest months of the year. In the cure of general diseases, too, pure air exercises a very potent influence. Jackson, writing on the Peninsular war, states that more lives were destroyed by accumulating sick men in ill-ventilated apartments than in leaving them exposed to severe weather by the side of a hedge or common dyke; showing the priceless value of fresh air.

SUNLIGHT.

The importance of sunlight for physical development and preservation is not duly appreciated. Women and children, as well as men, in order to be healthy and well-developed, should spend a portion of each day where the sun can reach them directly, this being particularly necessary when there is a tendency to scrofula. Just as sprouts of potatoes in a dark cellar seek the light and are colorless until they come under its influence, and as vegetation goes on but imperfectly in places where sunlight does not freely enter, so children and adults who live almost entirely in dark kitchens, dingy alleys and badly lighted workshops are pale-cheeked and feeble. And it should be said that houses are only fit to be occupied at night that have been purified by the sun during the day. It has been pointed out by Dr. Ellis that women and children in huts and log-cabins which contain only one or two rooms remain healthy and strong; but that after the settler has built a house and furnished it with blinds and curtains, the women and children become pale-faced, bloodless, nervous and sickly; the daughters begin to die from consumption and the wives from the same, or from some other diseases peculiar to women. At the same time the adult males who live chiefly out of doors continue healthy.

The value of sunlight for animal development may be illustrated by such facts as the following: In decaying organic solutions, animalcules do not appear if light is excluded, but are readily organized when it is admitted. The tadpole kept in the dark does not pass on to development as a frog, but lives and dies a tadpole and is incapable of propagating his species. In the deep and narrow valleys among the Alps, where the direct rays of the sun are but little felt, cretinism, or a state of idiocy, more or less complete, commonly accompanied by an enormous goiter, prevails and is often hereditary.

As a Protection from Disease—During the prevalence of certain epidemic diseases the inhabitants who occupy houses on the side of the street upon which the sun shines directly are less subject to the disorder than those who live on the shaded side. In all cities visited by the cholera the greatest number of deaths come in narrow streets, and on the sides of those having a northern exposure, where the salutary beams of the sun are excluded.

Except in severe inflammatory diseases of the eyes or brain the very common practice of darkening the sick-room is a very imprudent one. The restorative influence of daylight is thus excluded, and also the grateful and natural succession of light and darkness which favors sleep at the appropriate time and divests the period of sickness of the monotony and weariness of perpetual night.

Essential to Physical Development—Sunlight is important in the development and preservation of the physical system. In confirmation of this statement we have only to refer to the fact that children who are kept in dark alleys, cellars, factories and mines are frequently afflicted with rickets and various deformities and swelling of the bones, and especially with troubles of the spine. This occurs not only among the poor, who live in dark, damp places, but among the rich, who live in fine, dry, airy dwellings, but keep their children a considerable portion of the time in-doors, secluded from the sun's light and deprived of exercise. As vegetables lose their healthy color and strength when deprived of sunlight, so with children: Their muscles become soft and delicate, the nervous system deranged, the digestive organs enfeebled, the blood watery and pale, and the skin loses its healthy, ruddy complexion and has a pale, sickly hue. People who live in houses much shaded by trees are more subject to certain forms of disease than those whose dwellings are freely exposed to the sun. Shade-trees should be at a distance from the house, that they may afford a grateful retreat for the hot days, and never so near the house as to shade the buildings or the windows. A model situation, in respect to external ventilation and sunlight, is exemplified in the illustration on page 56.

Admit Sunlight to Rooms—When the ladies of this country take as deep an interest in their own healthful development and the well-being of their children, as they now do in the elegant gloom of their parlors, and will give free admittance to the life-giving light of the sun during the entire day, regardless of the fact that it may dim the bright colors of the carpets and hangings, thinking more of dissipating dampness, mould and the effluvia of human bodies—those fruitful causes of disease—than of preserving by darkness the seeming freshness of their furniture and apartments, we shall have fewer unhappy families, fewer mothers will wear their lives out in the servile care of puny and sickly children, and fewer husbands will find their severest toil in the nursing cares of their home and be obliged to return to their business or labor in the morning more wearied than they left it the previous evening;

for some of the most fruitful causes of disease will thus have been removed. If any gentleman regards his wife and children as an incumbrance of which he would gladly be rid, so the law did not hold him guilty of their "taking off," let him build for them a stately house in a fashionable locality and encourage them to follow the prevailing fashion of shrouding its apartments in unnatural gloom, and he will soon find himself a childless widower, consoled by the tender sympathies of his neighbors, instead of being punished as a murderer.

This matter of sunlight makes the chief reason, perhaps, why the wives and children of the poor are so much healthier, as a rule, than those of the rich. Living, as they are compelled to, in a hut or cabin, with but one or two rooms and without shutters and shades, the necessary daily sun-bath of their homes and persons imparts to them—unconsciously to themselves and while they are perhaps complaining of the hard fortune which has denied to them the deadly luxuries of the rich—the very elixir of life and health.

It has been discovered by the authorities in St. Petersburg, by many actual and comparative experiments, that the proportion of patients cured in hospital rooms properly lighted, was four times as large as in dark rooms. This discovery led to a total change in the method of lighting the hospitals of all Russia, which had the most beneficial effects. And in all the Russian cities visited by the cholera the greater number of deaths occurred in narrow streets and in houses with a northern exposure. It may be added that similar things have been noticed by physicians in American cities, although not published in a formal way, and that the truth extends to any prevalent malignant disease. Perhaps something might be learned as to hospital treatment here from the Russian practice.

HOW PARENTS MAKE CHILDREN DISOBEDIENT.

Training the Will—Many times one hears a mother coax and urge her baby to say words when somehow he has made up his mind he won't; and if he has not made up his mind, the coaxing causes him to do so. Ordinarily the baby says the one word of his vocabulary with readiness; but this time the company before whom he is being displayed makes him bashful or diffident, and he does not say it when first asked. Then is the time for the mother to stop. If she urge him in such a case, when he is not inclined to talk, it will only induce a habit of setting his will in opposition to hers; a habit that will "grow with his growth, and strengthen with his strength," and develop into obstinacy. Now, of course, she cannot reason with him, and there is no more moral wrong in his refusal than in his rejection of milk when he is not hungry. But all childhood is seed-time. Much may be done almost from earliest infancy by inducing, unconsciously to the child, habits of obedience and

preventing their opposites, thus making the after-way far easier for both child and mother. A contest with a child can generally be avoided, and ought to be. Temporal and external obedience may be obtained by it in some cases, though not always even that, but at what a fearful cost. It not only causes present suffering, but affection and confidence between child and parent are never the same after such a conflict, and "breaking the will," as it is called, instead of training it, is a dire mistake. There can be no self-governing force, no stability of character, without a resolute, well-directed will. The young tree, you know, must be pruned—never broken. The colt must be trained by gentle firmness, not severity; immortal souls and human hearts surely need no less care and watchfulness than inanimate things and the lower animals.

How Parents Instill Offensive Vanity in Children.—

This ignoble vice parents often thoughtlessly develop in their children, to their irreparable injury. A writer from Saratoga thus discourses on this subject:

"It is disgusting to see nurslings with rings and bracelets, and so on upwards through all gradations of age. Their little embryo minds and hearts are already poisoned with coquetry and love of show. They have "beaux," receive calls and bouquets, make appointments, and rivalry and envy in their ugliest shape early take possession of their souls. For years I have observed this disease all over the country, in all cities where I have seen society. Above all, it is painful to one's feelings at the hotels and watering places. When I see here, in the evenings in the parlors, rows of these little dolls and fops dressed, ribboned and jeweled, fanning themselves, monkey-like, in imitation of the elder part of society, I feel an almost irresistible itching in the fingers to pinch their mammas."

There is no influence ultimately more demoralizing to the mental and moral welfare of children than the pernicious encouragement of precocity in the most contemptible vices of their elders. Right-minded mothers will endeavor to see that their children are kept children as long as possible, and that every care is bestowed to watch over the tender blossoms, and preserve them from the heating, unwholesome influences of parties and motley company.

Why Men Curse their Mothers-in-law.—A stupendous imposition perpetrated by mothers is that of sending their daughters into the world as wives without having taught them the most necessary accomplishments of domestic life, such as how to make their own clothing, and how to cook and properly conduct household affairs. No one understands and appreciates or feels its blighting influences on his home so well as the deceived and defrauded husband, who desired a "help-mate," and believed that the object of his choice would realize his utmost wishes.

But now, alas, marriage has unveiled the deception. If the silent execrations and maledictions that have been heaped upon mothers-in-law for their dereliction of duty in this respect could be

thundered in their ears, it might arouse them to a sense of their duty, and perhaps induce some reform in their shortcomings, in the persons of their daughters.

IMPORTANCE OF PHYSICAL EDUCATION.

A proper development of the physical system should be ensured during childhood and early youth, for otherwise the opportunity is in a great measure lost forever, and a comparatively puny and delicate body and a life-time of suffering and disappointed hopes are almost inevitable. But if the intellect be neglected during the same time, while a healthy body is secured, the result is much less serious. An individual may not even know his letters at the age of sixteen or eighteen years, and yet with industry get a good practical education. The following important facts are lost sight of, or not known or attended to by many parents and educators, namely: If we strive prematurely to develop the intellect of a child by undue application, an unnatural flow of blood is directed to the brain to supply the great activity and consequent waste which are thus created in this organ; therefore, the rest of the body suffers, because an excessive amount of blood has been diverted from its legitimate uses. Nor is this all, for the premature development of a part of the system is necessarily but an imperfect development of even that part. For this reason we rarely hear of our precocious children in after life as distinguished men or women. It is a matter of no small surprise to many that such "smart children" do not attain a higher rank in after life.

Consequence of Neglect.—The secret lies in the fact before stated. No one disputes the very great importance of physical education for the young; yet we have but to look around us at the puny, pale-faced, deformed children to see how fearfully this important part of education is neglected. And this is not only the case with young children; the neglect extends to older ones; to the students in many of our higher institutions of learning, in which many of the teachers are very censurable for permitting their studious pupils to work too much, and to have too many studies at the same time, to the neglect of physical culture. We are glad that in some few of our cities and towns men are becoming awakened to the importance of this matter. A change is greatly needed in our system of education, from the common school up, for in its present condition it is productive of much disease, insanity and physical deformity.

Students Principal Sufferers.—It is melancholy, indeed, in our institutions of learning to see so many puny-looking young men and women: hollow chests, round shoulders and bending body are characteristics of our students, and premature old age and disease carry off but too many of our most gifted men and

women. In some of our female institutions of learning as high as thirty-seven per cent. of those who had been attendants have died within two years after leaving school. Students as a general rule are inclined to become listless and indolent; therefore they should be required, as a matter of duty, to spend several hours during the middle of the day in regular, active, systematic exercise and physical training, with active amusements. A double advantage is thus derived; for being occupied a portion of the time during the day they will be compelled to spend their evenings at study, instead of in dissipation and folly. No doubt our present system of education is very imperfect, though the day of its radical amendment may be distant. The force of example and training seems all-powerful. Teachers are educated to teach, and cannot well help teaching as they are taught. The orthodoxy of education is of the most proscriptive sort. To differ, to innovate, to adapt instruction, either in kind or degree, to the capacity and mental bent of the pupil would be certainly a perilous experiment, even could a teacher be found sufficiently bold and original to design and attempt such a thing. No doubt he would be ostracised, both by the profession and the patron. We want our children educated in the good old way; their minds stretched upon the rack which cracked the mental sinews of their fathers and mothers; their intellectual stature adapted to the proportions of the old Procrustean bed; their education to result in mental uniformity. Of course we all see that this is silly; that it would be quite as reasonable to design and seek to compass for our children an equal measure of physical strength and weight; that the higher mathematics, the dead languages and many of the arts now attempted to be taught in the public schools are totally impracticable—not to say useless—to the large majority of the pupils; but we go on in the same old fashion. Every child must be classed and graded and put through the same mechanical drill. It is quite certain that many are stultified and some ruined by the process. But that makes no difference, it is the fashion; it is the accepted theory of our age and country that all children should be educated, and educated in the same way. Of course both these propositions are outrages upon common sense. The vast majority must be "hewers of wood and drawers of water," laborers and common servants; and their partial or complete education, even were the latter practicable, which it is not, must defeat the ends of civilization, and more or less disorganize society. Such has been the effect hitherto; it is patent to the observation of all men; servants and laborers are growing scarcer, and idlers, vagabonds, tramps, thieves and robbers being multiplied year by year. This is the natural and necessary effect of the system of popular education; the servant is made to feel himself as good as his master, and the laborer quite the social equal of his employer. What wonder that these scorn service and labor and prefer to live by their wits? Society is simply reaping in the present carnival of outrage and

crime what it has sown. A little longer perseverance in the prevailing methods and it needs no inspired preacher to predict that the foundations of the popular deep will be broken up, and the loftiest social eminences covered by an angry and destroying flood.

GYMNASTIC EXERCISE.

There are many who do not appreciate the importance of such exercise, and its bearing on the development of the physical organization. To judge of its favorable effects it is only necessary to observe some of the results of such exercise—the vigor imparted and the muscular development produced. Every city and village should be furnished with a gymnasium; and all, both male and female, old and young, who have no other form of exercise, should regularly resort to it. Many good people imagine that there is no necessity for gymnastic exercises, because they are a novelty, a thing of to-day, and never heard of in the times of our stout old fathers. Why, they think, should we forsake the customs of our ancestors in favor of this new-fangled theory of romps? Our children will do very well, if they are as strong and vigorous as their fathers and grandfathers; and *they* had none of these modern inventions to help them to grow into men of might and mould. But these honest souls do not reflect that times have changed, and that the people have changed with them. We have no longer the same people, the same customs, or the same country. Then we had no large cities, and sedentary occupations were almost unknown. The men were farmers, herdsmen and hunters. The women toiled at the wheel, the loom, in active domestic service, and not infrequently a-field with the men. Together they lived, for the most part, in the open country or in small villages. A common necessity turned their daily life into gymnastic exercise. They ate sparingly and slept soundly. They had no money to spend for French cooks and little time to waste in devising luxuries for their table. Factories, spinning-jennies and power-looms were unknown; labor-saving machines were not; life meant labor, for both man and woman. They were healthy then, almost as a matter of course. Their diet was simple, their drink pure and unstimulating, and their habits natural and hardy. If “there were giants in those days,” as no doubt there were, they were hewed by the sharp chisel of circumstance out of the hardest granite of our nature. If their hardness would shame the degenerate men and women of our day, there was and is ample reason for all the difference, without credit to them or shame to us. They were simply the creatures of their time, as we are the creatures of our time.

Degenerative Influences of Luxury.—Now, both men and women have wealth, luxury and leisure almost without stint. There are large employments in the counting-room and at the desk.

The hardest workers are brain-workers. Moreover the mechanic, and even the farmer, is comparatively without exercise; he tends his machine or rides on his agricultural implement. The daily laborers, in the old, active sense of labor, are already in a minority, and that minority is growing smaller every day with the invention of new machinery and new applications of old machines. Our great cities shut up millions of people to lives of severest toil without any suitable or proper exercise. All the children of the wealthy, and many of those in moderate circumstances, are reared to do nothing useful, or to wait through life for the turning up of some lucky chance. The employments of the women consist of fancy-work, novel-reading and social dissipation. They have no health, no vigor, no stamina. They are utterly unfit to be wives and mothers. Late hours, luxurious living, bad air and want of exercise have made of them the mere effigies of women. Our young men, boys, and even some of our modern girls, who are distinguished or disgraced by the epithet "fast," are addicted to the use of tobacco and other poisonous stimulants. And against the encroachments of these insidious destroyers they can set up no defensive bulwarks of strong health and vigorous constitution. They, therefore, succumb and fall easy victims, where otherwise they might long resist and even overcome the enemy.

The Duty of Public Authorities.—All this may be remedied, in large part at least, by the establishing of public and free gymnasiums in every city and village of our land, or at least their universal association with educational institutions. It is the obvious duty of the State to provide for the physical welfare and development of her citizens, and this is her true interest as well. To encourage her in this she has the good example of the best and strongest of the ancient states. The wisest governments of ancient and modern times have made this provision, for the plain reason that it was the great constituent and reservoir of their own strength. More than anything else it fosters virtue. There is something naturally antagonistic between vice and vigor. Idleness and luxury, on the other hand, are the natural parents of social evil; a whole brood of intemperate appetites and malignant passions are born of this couple.

No doubt the public-school system of our later years shows a wonderful advance in the direction of paternal government. The world has never seen anything like it. It goes before all thought and all theory. It outstrips the most radical speculation. It springs up like the product of magic in the silence and night of thought, and while the world's mind is asleep. And, once in being, its growth is as marvelous as was its birth. Already it fills the towns and villages of the land; its commissioners are almost sovereign legislators; it has become one of the great factors in political combinations; and it grows daily in practical and pecuniary importance. Very soon the rural districts must demand their fair pro-

portion of modern educational privileges, and a few years hence we may see the palatial public school-house on every inhabited section of the country. What will come of all this we do not undertake to say. At all events the school system is a prodigy, at which the people of this country will do well to look long and carefully. We have only referred to it in passing, to demonstrate the propriety of that action of the government in establishing those institutions for physical culture and development, for which we plead. The argument is plain to any mind. If the State can do so much for the mental training of the children of the country, which is not always certain to make them better citizens, it can surely do something for the training of the body, which will certainly ensure for the rising generation, robust physical vigor and a higher intellectual stature.

METHODS OF OBTAINING EXERCISE.

Exercise strengthens and invigorates every function of the body, and is essential to health and long life. No one in health should neglect to walk a moderate distance every day, and if possible, in the country, where the pure and invigorating air can be freely inhaled. Walking is the healthiest as well as the most natural mode of exercise. Other things being equal, this will insure the proper action of every organ of the body. The walk for health should be diversified, and if possible include ascents and descents and varying scenery, and be alternated, when circumstances admit of it, with riding on horseback, active gardening or similar pursuits, and with gymnastics and games of various kinds. Calisthenics prevent deformities as well as cure them; a gymnasium should be attached to every school, whether for boys or girls. Athletic sports and manly exercise should form a part of the education of youth, nor should they be neglected in after life, especially by persons of sedentary pursuits. Many aches and pains would rapidly vanish if the circulation were quickened by a judicious and regular use of the muscles. These modes of exercise, practiced moderately and regularly, and varied from day to day, are much more advantageous than the exciting, immoderate and irregular exertions which characterize the ball-room, the hunting-field, and even the cricket-ground or the rowing-match, which are sometimes pursued so violently as to be followed by severe and permanent injury to the constitution. In the case of very feeble and infirm persons, carriage-exercise, if such it may be called, and frictions, by means of bath-sheets and gloves, over the surface of the body and extremities, are the best substitutes for active exertion.

Time for Exercise—The proper periods for exercise are when the system is not depressed by fasting or fatigue, nor oppressed by the process of digestion. The robust may take exercise before breakfast; but delicate persons, who often become faint from exer-

cise at this time, and languid during the early part of the day, had better defer it till from one to three hours after breakfast. Exercise prevents disease by giving vigor and energy to the body and its various organs and members, and thus enables them to ward off or overcome the influence of the causes which tend to impair their integrity. It cures many diseases by equalizing the circulation and the distribution of nervous energy, thus invigorating and strengthening weak organs, and removing local torpor and congestion.

Invalids should always be moderate in their exercise; take only short walks, avoid fatigue and not stand in the open air. The best time for them is in the forenoon, arranged so that they can rest for half an hour before dinner. They should never take exercise immediately before a meal or going to bed.

Exercise for Ladies and Others—As exercise is essential to the preservation of health and development, the proper method of taking it is an important subject of inquiry. Very little, and in many instances no provision whatever has been made in our cities and towns in the way of proper play-grounds for children or adults, and therefore it becomes necessary to seek private methods of getting exercise. As people are deprived of an opportunity for athletic sports and games, a competent teacher of physical exercise has become almost a necessity; even more essential than is a teacher for some of the branches taught in our schools. There are many who are not aware of the different motions which the human body is capable of making, and require making to prevent diseases and deformity; hence the importance of such teachers. Nor is the necessity for such teachers confined to cities and villages, for the female portion of the population of our rural districts have, in a great degree, neglected out-door amusements and exercise until disease and deformity have become the prevalent result.

Outdoor Exercise for Girls—Ordinarily it is not fashionable for girls and ladies to engage in active, out-door sports, such as running, playing ball, rambling over fields, etc.; and if young girls do take part in them they are cruelly called romps and tomboys—as terms of reproach—as though girls have not as good a right to exercise, air, light, amusements, symmetry of form and consequent health and beauty, as boys. In the eyes of some it is not proper for young ladies to engage in any of the out-door employments which give vigor and health to young men. There are but few who would wish to see them engage in the hardest manual labor, side by side with men, but we should like to see every farm provided with a large garden and orchard, and to see ladies spend more of their time cultivating berries, fruits, flowers and vegetables in the open air, and less in useless fancy sewing. They would thus make their homes paradises, where wealth, beauty and happiness would abound, instead of places of discontent, deformity and disease. Let such a change be wrought and it would cause the young men of our country to seek happiness in the quiet and peace

of the domestic circle, surrounded by loving wives and happy children, instead of living bachelors, repelled by the fear of being yoked to extravagant, lazy, sickly wives, and by visions of starving, sickly and dying children.

The Exercise that Produces Health—But the exercise which is taken to cure headache and its kindred evils may sometimes cause that very thing. This happens when the exercise is not taken regularly and a single opportunity is made too much of, and the person unaccustomed to it practices it too long or too vigorously. The fact is that out-door exercise gives the keenest physical enjoyment, and if, for instance, a young girl who has been closely shut up in the house has a chance to take exercise in a pleasant way she is very likely to go too far, and the troubles which follow the over-exertion often cause the too careful mother to conclude that her delicate child is not fit to be out doors at all, when in fact being out regularly in good weather is the thing above all others she most needs.

SLEEP AS A FACTOR IN HEALTH.

Very few people understand and still fewer appreciate the importance of sound, regular, timely and refreshing sleep. Tissue-waste, the consumption of the entire physical structure, from brain to cuticle, goes on during all our waking hours. Sleep is the time and the only time in which those reparative processes which may overcome all this waste can take place. To lose sleep is, therefore, to lose vital stamina, strength, health, and finally life itself. Hunger and thirst are thought to be the most painful modes of death; but the ingenuity of despotism has, we are given to understand, within a few years past, discovered one still more torturing—and that is death by the loss of sleep. The helpless wretch is put under the charge of cruel keepers, who never allow him, from the date of his sentence, to close his eyes in slumber. He rages, threatens, begs for death in any form—longs for impalement or any active and violent form of torture—raves, blasphemes, and so at last dies in agonies unspeakable.

Sleep a Force-Giver—Sleep is not only the tissue-builder, but the force-giver. Our strength and alacrity for daily tasks, whether of the mind or body, depend upon the quality and amount of our daily sleep; and the amount and quality of the sleep required depend not only upon the severity of those tasks, but upon the perfection of the organism with which we pursue them. The higher the capacity, the more and better is the sleep required. Small and inactive brains, like small and inactive bodies, may perform their functions with much less rest than large and active ones. The sleep required for health is in proportion to the physical and mental strength of the individual. An erroneous notion prevails

that sleeplessness is an evidence of mind. It is simply an evidence of the want of mind, since those who have much mind must have a correspondingly large amount of sleep.

Regularity Essential—Now, it is essential to good and refreshing sleep that it be sound. A light and broken slumber, disturbed by vivid dreams in which the emotional and intellectual powers are generally abnormally active, does not answer the restoring purposes of nature; it neither builds nor strengthens the system; hence, refreshing sleep is necessarily sound. Again, it is a condition of sound sleep that it be regular—that is, that it should occupy pretty much the same hours in every day. Alternate sleeping and waking, during the same hours of successive days, has the effect, often if not commonly, of rendering sleep difficult, uneasy and insecure. On the whole, if late hours must often be kept, it is perhaps better that the hour of retiring should be uniformly late than occasionally and frequently late; though even this preferable method defeats the evident design of nature, as shown by the declining health of those who from some peculiar necessity of their occupation, habitually turn night into day and day into night. A few years of useless and hurtful fighting against a great law and they are worn out, and must yield and go back to natural habits or die. Thus we see that these four named conditions of good sleep are vitally connected; that sleep, to be refreshing, must be sound; that to be sound, it must be regular; and that to be regular it must be timely, or taken at those hours indicated by the order of nature and a once universal custom.

Injurious Effects of Fashionable Hours—In this respect of seasonable rest Nature has given way to Fashion. Fashionable society means late hours, and all who aspire to enter that charmed circle must conform to this requirement. The modern fine lady must not only have time for her elaborate toilet before making her appearance at any place of evening entertainment, but she must also postpone her arrival to such an hour that, the place being filled, she can attract the greatest number of admiring regards to the splendid elegance of her costume. So theatres, concerts, lectures and sermons must alike wait for her coming, since she it is who gives character and tone to all these assemblies. People who labor and who ought therefore to be in bed by nine or ten o'clock, P. M., must conform to this rule or forego all fashionable amusements, and therefore it is that they are urged by all the well disposed to forego these amusements. It is not that the entertainments are wrong in themselves, but they sin against the health and happiness of all workers, whether with brain or muscle, by trenching more and more deeply as time goes on upon the hours which Nature has consecrated to repose. If workingmen and women must have amusement—and we concede that they must and should—let them devise it for themselves, within seasonable and proper hours. A persistently and repeatedly broken sleep very soon pro-

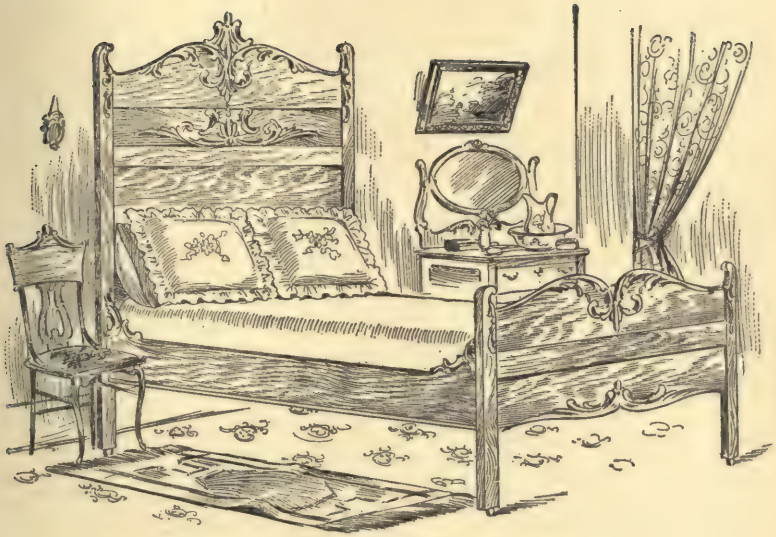
duces mental derangement; and the directors of asylums for the insane have found, by experience, that regular and early hours are essential to the improvement of their patients; and they require all their balls and parties to close punctually at ten o'clock, P. M. In this respect the insanity of fashion might well be placed under a like wise and judicious direction.

One hour of sleep in the early night is worth two at its end or in the day, for all the purposes of health and strength. If our ladies understood, what is undoubtedly the fact, that all their "beauty sleep" must be gained before twelve P. M., there would probably be fewer devotees of fashion among them. The faded, wan and prematurely old women of society owe the earlier wreck of their once splendid charms more largely to irregular and untimely hours than perhaps to all other causes combined.

CLOTHING, ITS USES AND ABUSES.

The adoption of artificial clothing by man, serves three purposes—the regulation of the temperature of the body; protection from friction, insects and dirt; and ornament. In this climate clothing is chiefly employed for warmth, which purpose it secures by moderating or restraining the escape of heat from the body. Articles of clothing have no power in themselves of generating heat, and are designated as warm or cool just in proportion as they restrain or favor the escape of heat. Thus, a lady's muff and a marble floor are ordinarily of the same temperature; but the sensation produced by each is widely different, because the animal heat is retained by the muff, and rapidly carried off by the marble. Hence, for clothing we select those substances which least conduct heat, such as the wool of sheep and the silk produced by silk worms, which are superior, as non-conductors, to cotton or linen. In this country we have recourse chiefly to the former in winter, and to the latter in summer, cotton and linen garments being coolest; linen cooler than cotton.

In-door Clothing—There are several practical errors on the subject of clothing, committed perhaps by a majority of persons, to which we may briefly direct attention. "The first and most obvious of these," says the celebrated Dr. Blaikie, "is wearing too much clothing in-doors or in bed, thereby both exhausting the natural powers of the skin, and exposing its action to a sudden check on going out into the cold air. This forms one of the principal objections to the almost universal use of flannel, worn next the skin, and kept on even during the night, as is the practice with many persons. The skin is thus unnaturally excited, and in course of time loses its natural action; or, on the other hand, becomes so sensitive as to have its action checked on the slightest exposure." "I never use anything else," the same physician informs us, "than a light



AN ORDINARY BED.

DISEASE GENERATOR.

Bed comforts, health and life destroyers and infant torturers. Should be burned or banished from every house. See pages 108, 160.

Thousands of children killed or made sickly by unsuitable beds and bedding every year.

It is a rare thing to find a mother who knows how to properly prepare her child for night or knows the kind of clothing which should be placed on children's beds. But their names are legion, who are so self-opinionated that they think they know and refuse information.

cotton shirt to sleep in, and strongly object to the common practice of sleeping in flannel."

Wearing Flannel next the Skin—The prevalence of this objectionable habit suggests the necessity of a word of caution. It is well known that, even in otherwise normal conditions, the skin of some persons is highly irritable and most unpleasantly excited by contact with flannel, and that when this exalted sensibility exists, the use of flannel next to the skin may develop decided physical alteration. It does this mechanically by retaining the local heat and intensifying reaction. Cases of skin-disease often come before us in which pruritus is thus aggravated and the affection prolonged, especially when combined with neglect of proper washings. In congested conditions of the skin, or in diseased states of the nerves of the skin, flannel is inadmissible; or if necessary to guard against vicissitudes of the weather, it may be worn outside a linen garment, as before suggested. The diseases in which this advice is especially applicable are, according to Dr. Tilbury Fox, certain skin-diseases, certain syphilitic eruptions, in their early stages, itch and prurigo. "A remembrance of this little practical fact," says the above author, "will sometimes give us the greatest cause to be thankful that we attended to it, trifling though it be." Flannel, however, is of great value in our variable climate and may be generally worn through the whole year as a great protection to health and life. Even in summer weather flannel should not be cast aside, but a thin, light garment of that material substituted for a heavy one.

Bed-clothes, Heavy Comforts, are Disease Producers, *and should be cast into the flames.* Light quilts or blankets, and more in number, should take their places. Heavy ones throw you into a perspiration, and then you kick them off; this gives you a chill and you are compelled to take them back again; and so you go on, alternately roasting and freezing and constantly cursing, through the whole blessed night. Those heavy 'comforters,' as the country people call them, should be banished or burned as abominations. The diseases, colds and profanity they have occasioned are incalculable. They are not quite unendurable on an extremely cold winter's night, if one could be quite sure they would be found on his bed in no milder weather."—*Dr. Campbell.*

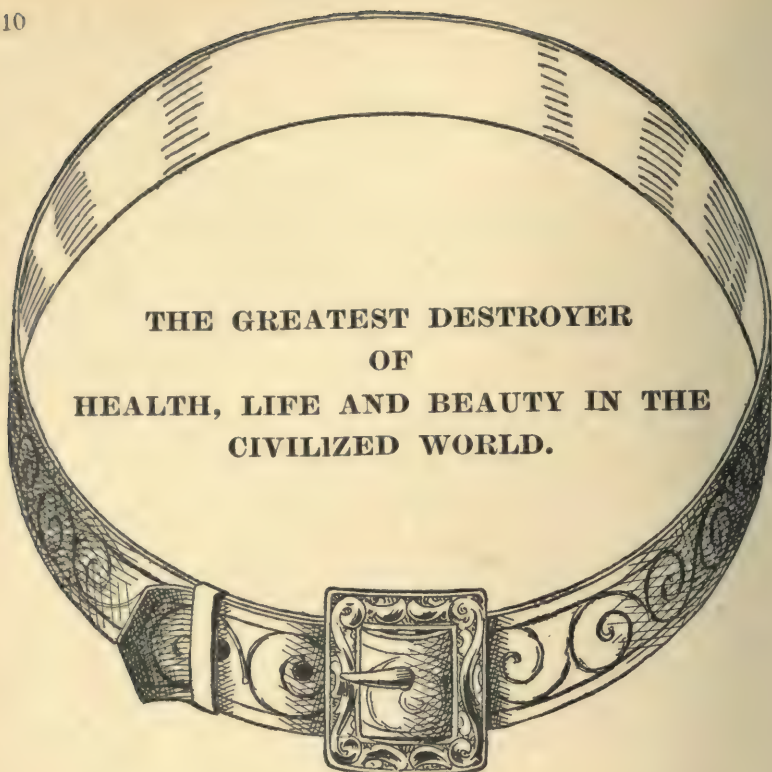
Color of Clothing.—The color of clothing is not unimportant, light being preferable for the following and other reasons: 1. White reflects the rays of heat which the black absorbs; at the same time it impedes the transmission of heat from the body. Light-colored clothes are therefore best both for winter and summer, retaining the heat in the former season and keeping it off in the latter. 2. Particles which emanate from diseased bodies as in miasmatic districts, and unhealthy accumulations, are much more readily absorbed by dark than by light clothing. Therefore those

who are exposed to contagious influences in the sick room, or in unhealthy neighborhoods, should wear light clothing. Dark clothes favor the transmission of contagious diseases from house to house much more readily than light. Dark clothing imbibes odorous particles most readily, as the effluvia of the dissecting-room or the smell of tobacco; and even the peculiar odor of city smoke is at once detected in black clothing by country people.

Frequent Changing and Cleansing of clothing is another point deserving attention. The practice of adopting dark-colored instead of light-colored garments has frequently its origin in economy, dark clothes tolerating an amount of dirt inadmissible in light. It should be recollected, however, that dark garments contract dirt after being worn a little time as much as light, and if not changed and cleansed may favor the production or spread of disease. Thick, heavy clothing, the tissues of which are close and firm, is inconvenient. The textures of materials for clothing should be loose and porous, and contain air in their interstices—air being a bad conductor of heat. The advantage of having numerous light instead of fewer heavy coverings to the skin are these: The stratum of air interposed between each layer of covering being a non-conductor, they are relatively much warmer than a much greater thickness in fewer pieces; secondly, they can be more easily laid aside to suit changing temperature; thirdly, being lighter, they are less apt to overheat the wearer, and thus lessen the chance of consequent chill.

In China, one of the most changeable climates in the world, the variation in one day being frequently 35 or 40 degrees, this is the mode adopted by the natives to protect themselves: a working-man will often appear in the morning with fifteen or twenty light jackets on, one over the other, which he gradually strips off as the day gets warm, resuming them again towards night.

General Advice.—Other points may be briefly referred to. Summer-clothes should not be put on too soon, or winter ones too late. Thin-soled or high-heeled boots and shoes are destructive to health. High-heeled boots or shoes tend to change the long axis of the body, directing the trunk backwards, and this altering the inclination of the pelvis is likely to influence unfavorably the process of gestation. Other injuries that have resulted are, troublesome corns, inflammation of the ligaments of the ankle joints and of their sheaths, and even dislocation of this joint. Only the anatomist knows the frightful misplacement of the internal organs of the body that is caused by the suicidal habit of tight lacing. It gives rise, more or less, to that depression of spirits so common to young ladies; and worse still, occasionally originates or aggravates organic disease of the most serious description. The muscles of the body were intended to sustain it erect; but when stays are applied they soon become indispensable, by superseding the action of the muscles; and, in accordance with a well-known law of the



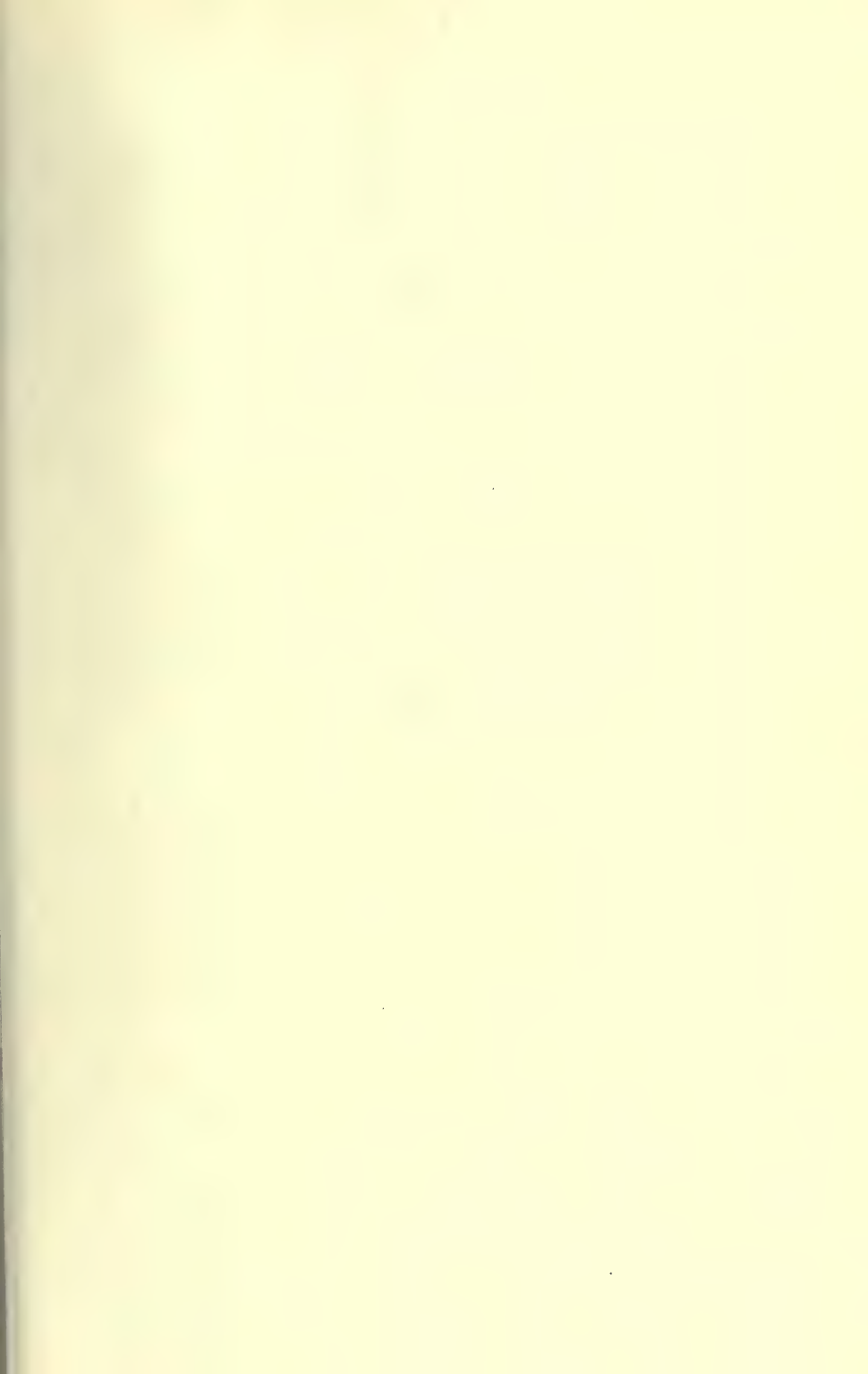
**THE GREATEST DESTROYER
OF
HEALTH, LIFE AND BEAUTY IN THE
CIVILIZED WORLD.**

WAIST BELT.

This and its kindred waist compressor are the most destructive inventions to human health on the **Face of the Globe**. King alcohol claims his victims by the hundred thousand; but these by the millions. **Abominations:** Dr. Ellis, in his Book on Health, says: "The majority of our women are partial invalids, and most of our misses are miserably 'peaked or puny,' because they or their mothers before them wore those abominations, and that many of them are unfit, and should not be allowed to become, mothers of families." He further adds: "The strong arm of the law, should, by all means, be evoked to stay this deterioration and destruction of the human race."

The very least compression, almost, on the waist is a great foe to the human system and to health. The consequence is, no father should ever allow a **Waist Belt** to enter the portals of his home.

Deaf to Reason: It is often said that it is useless to protest, preach or proclaim against this evil. It is true that the ignorant and giddy are deaf to reason or advice, but not always so with the more thoughtful. Read carefully the article found on page 113.





FRANCES WILLARD.

READ MISS FRANCES WILLARD'S PETITION.

The following is one of the truest statements ever made by this noble woman :

" Parents, I pray you plead with your daughters ; husbands, beseech your wives ; young men, beg your sweethearts to stay the destructive effects of these *fell destroyers* of the human race —THE WAIST BELT AND CHEST COMPRESSORS. Ladies, old and young, I beseech you to consign these colossal enemies to the flames if you prize BEAUTY, HEALTH OR LIFE. We are nearly all slaves of fashion and inherited sufferers from these, our worst enemies. It is difficult to find a woman who wears her clothing as she should. Read page 113 and you will act as Miss Willard suggests.

muscular system, when they cease to be used they cease to grow, and become insufficient for the discharge of their natural functions.

Clothing of Children.—Finally, it may be stated that the clothing of children, whose feeble frames are less able to resist cold than those of adults, is generally insufficient. When a baby is divested of its long clothes, it is in danger of being insufficiently clad, the danger increasing when it can run alone and is more exposed to atmospheric influences. It can not be too strongly impressed upon those who have the charge of children, that the practice of leaving those parts exposed, which when grown up we find it necessary to clothe warmly, especially the lower limbs and abdomen, is a frequent cause of retarded growth, consumption of the bowels, of the lungs, etc. Insufficient warmth of the body, whether in children or adults, renders the person more susceptible to disease.

DISEASES PRODUCED BY TIGHT CLOTHING.

Medical authorities agree on the following as being a list of the principal diseases that are caused by tight dressing: Apoplexy, headache, consumption, giddiness, jaundice, womb diseases, cancer of the breast, asthma, spitting of blood, palpitation of the heart, water on the chest, cough, abscesses in the lungs, eruptions, diseases of the kidneys, also of the liver in some of its manifold complications, bad digestion and loss of appetite. And to these consequences should be added that of bearing generally unhealthy and deformed children, a large proportion of which soon find a premature grave, while others swell the list of the inmates of asylums and almshouses, thus carrying into the next generation the ill-starred fruit of a sinful indiscretion.

The only plea in defense of the course that has produced this vast array of disease, misery and death is the effort to enhance beauty. Will human beings ever learn that they cannot thwart nature; that, if they trespass on her rights in one respect, they are sooner or later destined to pay the penalty; and that naturally attired persons are those who more readily acquire and maintain true beauty? Every article of clothing worn by man, woman or child should be suspended from the shoulders. Not one article should be worn tighter than if it were naturally laid or placed around the body, without a particle of effort to stretch or draw it, and every article of clothing which cannot thus be worn had better be "cast into the flames." Many ladies maintain that they wear their clothing loosely. They may imagine that such is the case. Yet at the same time it is seldom that one can be found who is not sadly mistaken on this point, and who does not really wear her clothing unnaturally tight, while much of it is suspended in that most pernicious way—from the hips.

The Sin of Tight Lacing—There are some devotees of fashion who have conceived the idea that the beau ideal of beauty consists in the chest being compressed into a wasp-like waist, or an hour-glass shape. But it is gratifying to know that these giddy persons have but few admirers, except the dandy and the fop, who have but little to pride themselves on, except their fine linen and delicate hands. It can be justly said, that there are many evils in our midst of infinitely less magnitude which are suppressed by law, and that this custom ranks prominently in its destructive influence with those other arch-enemies of human health, whisky, tobacco and impure air.

It is claimed by many that this injurious practice has done more within the last hundred years than war, pestilence and famine, toward the physical deterioration and destruction of our race. In the case of the unfortunate victims of tight dressing, many of the sins of the mother are visited upon her helpless offspring, who in turn propagate disease and deformity until impotence or idiocy ensues and the family is extinct.

It is not, perhaps, too much to say that the instances in which ladies, in this country, do not dress too tightly, are the rarest of all exceptions to an almost universal rule; so rare, indeed, that few can be found at any age; and it is doubtful if ten per cent. of ladies, American-born, can be found in any city of the United States, who are not now distorting their natural proportions, undermining their health and laying the firm foundations of future disease and misery, not only for themselves but also for their children, by wearing tight clothing.

In fact, almost any lady may be made to convict herself of this sin, and actually does so, in almost every conversation which she holds upon this subject. If accused of wearing tight dresses, she will indignantly deny it. If asked if the dress she has on is comfortable, she will answer in the affirmative. Now, if we further inquire whether she feels better in it than in a loose dress, she will at once impulsively reply, "Oh, yes; for, in a loose dress, I feel the want of a support." She is simply like the rum-drinker without his accustomed dram; that is, she has dressed tightly for so long a time that she has paralyzed the muscles of her body, and they no longer perform their natural office of supporting, so that she has to substitute cotton, linen and whalebone in their stead. If the practice of excessive tight lacing be continued, deformity and disease must, as a matter of course, soon result. The only remedy is, at once and forever, to abandon the stays and hip-suspended skirts, and suffer the discomfort entailed in becoming accustomed to the change, until the muscles, by exercise, shall regain their natural activity and resume their proper functions. Any woman who will not do this must not have too high hopes of health, beauty and long life for herself, and of strong, healthy and well developed children.

Deformity is not merely occasional, but the inevitable result

of extremely tight dressing. No woman can persevere in the practice and escape it, as a surgical examination, were they disposed to submit to it, would immediately show. When tight dresses have been applied to girls before the bones have attained solidity—a common practice with too many young girls—a lateral or “sideways” curvature of the spine is the speedy and inevitable result. And nothing is done to counteract this evil, no robust exercise, no health-giving work. Six hours a day in the school-room, two hours more for home study, and as much as they please for novel reading, thrumming the piano, embroidery, etc., make up the day of our young girls, from ten to sixteen years of age. Their parents do not require them to assist in domestic employments, because work is vulgar and unfashionable, and would soil the delicate whiteness and harden the soft texture of their pink and lily hands.

ALCOHOLIC LIQUORS.

Alcoholic Liquor as a Cause of Disease—Those who die from the direct effect of intoxicating liquors—that is, of delirium tremens or drunkenness—comprise but a small portion of those who go down to their graves from this cause, for it is a fact well known to the medical profession that those who use stimulating liquors are far more liable to be attacked with any prevailing disease, and the fatality is also much greater in such cases, than with those of temperate habits. As a general rule, throughout the world, the first victims of cholera are drawn from those who use stimulants. The same is true in cases of sunstroke, chronic inflammation of the stomach, headache, diseases of the liver, jaundice, dropsy, impotency, gout, colic, peevish irritability, febrile diseases, epilepsy, apoplexy, loss of memory and mania. These are some of the diseases that afflict the rum-drinker, and the habit is one of the most prolific causes known of lunacy. In England, Lord Shaftesbury, chairman of the commission on lunacy, stated in a parliamentary report that six out of every ten of the lunatics in their asylums are made so by the use of alcohol.

Adulterated Liquors in this country count their victims by the thousand. Wines, said to be the least injurious of the stimulants, contain the adulterants in a very great degree. Many of them contain but little of the juice of the grape and some of them none at all. They are manufactured from dye-stuff, drugs and alcohol, with that most dangerous article, lead, added, to render them clear and prevent their becoming sour. Hence their use in any quantity can only be injurious to health and destructive to life.

Alcoholic Liquors not Essential in Medicine—Dr. John Ellis, of New York, says: “I can say that, after devoting over eighteen years to the study and practice of medicine, I have never seen eighteen cases in which the use of alcoholic drinks have

done my patients good. I have never seen a patient recover under their use, that I had not good reason to think would have recovered without them. I have frequently been called to see feeble persons, especially females, who had been taking wine, beer, brandy and the like for years, to strengthen them, and still they remained weak; and I have found that such patients improved when they were required to live on a proper diet and discontinue their stimulants. So far from being strengthened they had actually been debilitated by their use."

The celebrated Dr. Edmunds, of London, makes the following statement in his writings: "The cases in which I use alcohol in my practice I confess become less and less frequent every day. And I should feel that I lost very little were I deprived of it altogether." It is probable that there are conditions or states, in some few diseases, where stimulants of this character may do some good; but the great difficulty is to know exactly when this condition or state occurs, and there is usually more or less disagreement on this point among physicians. And when they do not effect good, they usually aggravate the disease and result in harm, for all undue excitement is necessarily followed by corresponding depression, and thus thousands are sent to a speedy grave in consequence of it. How can it be otherwise? Can a man who is prostrated to the very lowest ebb of life stand a course of stimulation whose reaction, all experience shows, will prostrate a well man? Take for example a most critical case, in which the patient is for days in a state where he can barely live without stimulants, and now let him be given these, and an unnatural state of excitement will follow, or a degree of activity above that which the exhausted organism is capable of sustaining; as a necessary consequence, corresponding depression must follow, and if the patient was barely at the living point before the prostration, which is sure to follow, he must now sink below that point. It may be asked, can not this state of excitement be kept up by the use of stimulants for days, until the patient recovers? If space would admit, we might logically show that this can rarely, if ever be done.

Alcoholic Liquors afford Neither Muscular Strength nor Nutriment—It is a law of the animal economy that any substance or food must, when taken into the body, be changed or decomposed into its elements before it can yield to the body those forces which produce muscular strength. Now the fact is, that when alcohol is taken into the body it leaves it again as alcohol undecomposed, there being no change wrought upon it. It therefore cannot have given up those elements that are needed in order to supply nutriment and muscular force. As an evidence that alcohol thus leaves the system undecomposed and without any change, you have but to give an individual a few tablespoonfuls and you can shortly afterwards smell its vapor as it is emitted from the pores of the skin. You can, as easily and definitely, reproduce and

demonstrate the presence of alcohol by the exhalations from the skin and lungs, as you can the presence of arsenic in the body of a person who has been poisoned by it. Food is that which is decomposed in the body and supplies it with the forces which the body afterwards gives out. If your horse is tired by its journey, you can give him a feed of corn and time to digest it, and he goes into harness again as vigorous as ever and ready for the next stage. What is it that has taken him along through the second stage? It is the corn which has served as food to the animal, and has become decomposed in its tissues, just as the coal would be put into a locomotive furnace when the fire was going down. Now, suppose, instead of giving a horse a measure of corn, you give him a liberal allowance of whip, which is a stimulant? The horse goes on and works until more completely exhausted; and just so with a man. It should be recollected that food puts strength into a man by giving substance to supply waste; but alcoholic stimulants abstract strength from a man; they excite but to exhaust. Then recollect that when you employ stimulant, you are using that which will exhaust the last particle of strength with which your body otherwise would not part. That is what we always do when we work on stimulants; it is obviously unnatural, and therefore injurious. The foregoing statement being true—that alcoholic liquors furnish neither nutriment nor muscular strength—it must logically follow that their use is unnatural and injurious.

Alcohol an Enemy to Prosperity—To illustrate the beneficial effects that flow from curtailment of the use of alcoholic liquors, we give the following facts which were submitted by the clerk of the circuit court of Edwards County, in the State of Illinois, some time since:

"There has not been a licensed saloon in this county for over twenty-five years. During that time our jail has not averaged an occupant. This county never sent but one person to the penitentiary, and that man was sent up for killing his wife, while drunk on whisky obtained from a licensed saloon in an adjoining county.

"We have but very few paupers in our poor house, sometimes only three or four. Our taxes are thirty-two per cent. lower than they are in adjoining counties, where saloons are licensed. Our people are prosperous, peaceable and sober, there being very little drinking, except near Grayville, a licensed town of White County, near our border. The different terms of our circuit court occupy three or four days each year, and then the dockets are cleared."

Treatment of the Alcohol Habit—Dr. W. F. Waugh, of Philadelphia, has devoted considerable time to the study of the alcohol habit. In seeking the causes for the return of the drunkard to his habits of intoxication, he has noted the following:

"1. PREVIOUSLY EXISTING DISEASE which had led to drink. It is a misfortune to a neuralgic when the relief afforded by alcohol is

manifested to him. Dyspepsia has caused many a man to become a drunkard.

"2. **OVERWORK**; especially when accompanied by ill-health. When a man begins to resort to alcohol to enable him to perform tasks which are above his unaided strength, he is calling the Saxons into Britain; he is invoking the aid of an ally who will certainly one day turn upon him with deadly effect. The most hopeless cases received in our asylums are those which come under this head.

"3. **CATARRH OF THE STOMACH** is responsible for many cases. This is due to the direct effect of alcohol upon the gastric mucous membrane. It is the source of the "next-morning headache," the thirst, and loathing of food in one who is just getting over a debauch. The temporary relief afforded by alcohol in these cases induces many to continue their potations who would otherwise have stopped.

"4. **CATARRH OF THE MOUTH**:—Although the gastric catarrh has been generally mentioned by writers, it is singular that none of them have called our attention to catarrh of the month. Observation shows that after a night's drinking there is great dryness of the mouth, the secretions of the mouth and salivary glands being suspended. I am convinced that in many cases the desire for drink has no deeper origin than the mouth.

"5. **DEPRESSION**:—The depression due to the withdrawal of the accustomed stimulus is, however, in nearly all cases, a powerful incentive to a relapse into habits of tippling.

"**TREATMENT**.—The treatment of these varieties must necessarily greatly vary. In the first and second classes the recognition of the cause affords the indication for treatment.

"In the third class, namely, that dependent on gastric catarrh, the following treatment has proved most beneficial in my hands: One hour before meals give a teacup of hot water in which has been dissolved ten grains of bicarbonate soda. This dissolves and carries off the tough adhesive mucus which coats the mucous membrane of the stomach, and which besides hindering digestion, acts also as a ferment. Half an hour later, drop upon the cleansed surface of the gastric mucous membrane, a small dose of subnitrate or subcarbonate of bismuth, oxide of zinc or oxide of silver. In a few days the catarrhal symptoms will subside. If the digestive fluids be not secreted in a healthy manner, minute doses of rhubarb and ipecac will restore the normal functions much more certainly than pepsin of any sort."

"In the fourth and fifth classes I desire to recommend the administration of Erythroxylon Coca. It is useless in the treatment of delirium tremens, but to relieve the depression resulting from the deprival of stimulants it has remarkable powers. Its effects in relieving one from the sense of fatigue are too well known to require more than a passing notice. I have frequently returned to

my home after a hard day's work only to find that a still harder night awaited me in the shape of a tedious labor case. A dose of coca, however, removed the fatigue and left me as fresh as when starting out in the morning after a sound night's sleep."

Dr. Waugh proceeds to give instances of the alcohol habit cured by the use of the Erythroxyton Coca. To overcome the obstacle that men did not like to be seen taking medicine, he has put up the coca in masticatory plugs like tobacco, and called coca-bola. This has also had the additional effect of curing the tobacco chewing habit.

TOBACCO.

Tobacco a Poison—No one will question the fact that tobacco is a poison, who has observed the deadly sickness it usually produces when chewed or smoked by those not habituated to its use. There are but few substances in nature that are capable of destroying life so suddenly as tobacco. From one to two drops of the oil have frequently been administered to dogs and cats, and invariably in a few minutes life became extinct. Dr. Franklin applied the oily material which floats on the surface of water when a current of tobacco smoke is passed into it, to the tongue of a cat, and found it to destroy life in a few minutes.

Tobacco a Cause of Disease—Tobacco is a frequent cause of disease of the digestive organs, lungs, nervous system, head, eyes and brain. It causes heartburn, nausea and frequent belchings; pains and diseases of the liver; pains in the bowels, with disposition to diarrhea or costiveness. It causes, too, difficulty of breathing, oppression of the chest, pains in the chest, with inability to take in a long breath, and violent palpitation of the heart, as well as pain and stiffness of the back. Tobacco also produces a tendency to paralysis, causes drowsiness, unnatural sleep, nightmare, troublesome, anxious and frightful dreams, and a great number and variety of affections which we have not space to mention. In fact we have noticed but a small proportion of the diseases which are asserted by some of our best medical writers to spring from the use of tobacco. Of course it affects different persons in different ways, searching out and seizing upon those parts of the body which are least able to resist its destructive force.

Yet there is seldom any one who habitually uses tobacco but will find himself troubled, more or less, by the symptoms of the above named diseases as soon as he stops its use; but while using it freely it will palliate or allay, as do all poisons, the symptoms its use has caused. Not infrequently on rising in the morning, after having abstained from its use during the night, he will get a slight glimpse of his waning vital energies; but his view will soon again be obscured when he partakes of the alluring leaf.

Medical Testimony—The senior physician to the Metropolitan Free Hospital, in London, writes as follows: "I can testify, from long observation, that the chronic use of tobacco in any form is a very prevalent cause of debility and manifold diseases. Take, first of all, the sense of sight: one of the most celebrated London ophthalmic surgeons tells me that he is constantly consulted by young gentlemen for weakness of vision, caused by smoking; and I myself have in many cases seen the prolonged use of tobacco, especially when it is chewed, cause the total loss of sight. Then take the circulatory system, and we find smokers subject to palpitation of the heart and far less able to bear up against the extremes of heat and cold than they were before making use of tobacco. The use of tobacco is apt to cause a relaxation of the muscles of the back of the mouth and dusky discoloration of the fauces, with hoarseness from congestion of the vocal cords. The overwhelming majority of cases of cancer of the lip are found in men who smoke, and cancer of the tongue has often been said to be caused by the irritation of the fumes of the pipe or cigar. Great smokers lose, to some extent, their vivacity; *i. e.*, they are less vital than they used to be, and less easily moved by a slight 'stimulus' which might be pleasurable to non-smokers. They are notoriously dyspeptic. I need hardly refer, indeed, to such a well known fact. They are subject to constipation and 'malaise;' and when deprived of their stimulus are more miserable, perhaps, than even drinkers. I must take the liberty to protest against a custom which has been inveighed against by Brodie, Copland, Critchett, Guerrin, Mantegazza, Cacopardo, and numerous heads of my profession in all countries."

Mental Effects—Mr. Solly, an eminent writer on the brain, said once in a clinical lecture on that frightful and formidable malady, softening of the brain, "I would caution you as students against the use of tobacco, and I would advise you to disabuse your patients' minds of the idea that it is harmless. I have had a long experience in brain-diseases, and I am satisfied now that smoking is a most noxious habit. I know of no other cause or agent which tends so much to bring on functional disease, and through this in the end, to lead to organic diseases of the brain, as the excessive use of tobacco."

The influence of tobacco on the human system is quite as much to be dreaded as the use of alcoholic drinks. Drunkards invariably are tobacco-users. Not one young man in a hundred would ever think of using intoxicating liquors did he not first learn to use tobacco in some form. Daughters of drunken fathers do not inherit a hankering after spirituous liquors; neither would the sons, did they but abstain from the use of tobacco. And yet ministers of the gospel and many of the deacons of our churches, good men, so-called, who preach temperance and cleanliness to the youths of the land unceasingly, keep their mouths filled with the vile stuff or

make smoke-houses of their heads, as if the end and aim of life with them was to pickle their tongues in smoke; and their whole bodies are so saturated and polluted with the vile stuff that their neighbors' nostrils announce their coming afar off. Is it to be wondered at that so many of our young men, following in the steps of their illustrious fathers, learn to use tobacco and cultivate a taste for stimulants which at last becomes a direful disease and then finally die lunatics or drunkards?

The smoking of a single cigar, and especially by those not long habituated to its use, will increase the pulse from ten to fifteen beats. The results of both chewing and smoking often are depression of spirits, irritability, peevishness, loss of memory, dullness of perception and despondency, as a natural result of over-excitement. The teachers in our institution of learning not infrequently observe that young men who use tobacco, as a general rule, are much more dull and stupid than those who do not; and they, as well as eminent physicians, have expressed the opinion that tobacco to-day is doing almost as great a physical injury to the present generation as alcohol.

Sudden Death—Dr. Twitchell states that nearly all the cases of sudden death occurring during sleep, which came under his observation, were those of persons who had indulged largely in the use of tobacco. And subsequently the correctness of his statements was confirmed by investigations made by the Boston Society of Medical Observation.

Physical Effects—The use of tobacco produces marked alterations in the most expressive portions of the face. In consequence of the constant use of the muscles surrounding the mouth there is occasioned an irregular development of these parts, which presents a coarser appearance when compared with the rest of the features. The eye loses its natural fire and becomes dull and vacant, and the skin assumes a sallow appearance.

Uncleanly—To say that this habit, with many, is uncleanly and even filthy, is only repeating what is expressed every day. The linen, the mouth, the breath, and many times the room of its victim, indicate the effect it produces.

Moral Effects—The use of tobacco has a tendency to impair the taste, so that simple fluid and simple diet are liable to become insipid and unpalatable, and the natural resort is then to the "flowing bowl." It also excites the various animal propensities beyond their proper balance, and tends to debase the moral character and make man more animal and less intellectual.

Expensive—Tobacco, in its different forms, costs the people of the United States more than \$30,000,000 annually, all of which is far worse than if thrown away. It is not a natural food for man; it will not sustain life, but is a poison, and all its tendencies, except in rare cases, are to destroy life. Is it any wonder that we cry hard times, when there are hundreds of millions of dollars annually

thrown away for tobacco and intoxicating beverages? Those who are so adroitly seeking for the cause of this condition of affairs, would they but take the trouble to examine the statistics and investigate this matter, would find herein one cause for this great depression that has been more potent than all others combined.

Cigarettes and Tobacco are Ruining Millions of Young Men and Boys, thereby developing the passions, softening and weakening the bones, and greatly injuring the brain and nervous system. A boy who early and freely uses tobacco never is known to make a man of much energy of character, and generally lacks mental and physical energy. The larger proportion of the aged, and those of mature years, very much lament that they were led to indulge in this habit. This should be a solemn warning to the young not to fall into the same error. Many boys have erroneously conceived the idea that to "puff" a cigar or cigarette, or chew a quid of tobacco, is manly—is genteel. Yet, if they did but know in what contempt such a course is held by the thoughtful and considerate, there would never be a repetition of it. I fancy I hear some young reader remark, "My father used tobacco many years, and died an old man; if tobacco killed him, it was very slow poison." I am apprised of the fact that some men of strong constitutions, active life and otherwise good habits, may use tobacco and alcohol, and even get drunk often, and yet live to a good old age; but they are exceptions to the general rule; a much greater number will die young.

Besides, it will be found that most of those who lived to an old age did not commence the use of these poisons very young; else they used them moderately and were never what we call hard drinkers or smokers. And we would further say to this young man, that if he were born after his father commenced using tobacco, he does not, for that very reason, if not for others, possess his father's strength of constitution, if the latter used tobacco as freely as most young men use it to-day; neither can he follow in his father's footsteps without the chances of filling a premature grave. How many of us are to-day suffering from paternal errors in consequence of the iniquities of fathers being visited on their children.

Tobacco Destroys Health, Imperils Social Standing, Extinguishes the Affections.—Besides it produces consumption, feeds dyspepsia, cherishes nervous diseases and palpitation of the heart, excites liver complaint, creates cancers, encourages headache, engenders weak eyes, invites disease and promotes softening of the brain. Its foul perfumes invade every railroad coach, street car and omnibus-line; contaminate hotels, boarding-houses and private apartments; its stench invades the family and social circle, and nauseates the mother, sickens the wife and insults the daughter; it extinguishes the affections of the doting lover, offends the young bride and disgusts the young maiden. It weakens the digestion, perverts the taste and leads to intemperance. It

creates an offensive breath, repulsive mouth and soiled linen. It impairs the voice, furrows the cheek and sallows the complexion. And last, but not least, it makes angry mothers and scolding wives.

SELF-POLLUTION.

There are various names given to the unnatural and degrading vice of producing venereal excitement by the hand, or other means, generally resulting in a discharge of semen in the male and a corresponding emission in the female. Unfortunately, it is a vice by no means uncommon among the youth of both sexes, and is frequently continued into riper years.

Symptoms—The following are some of the symptoms of those who are addicted to the habit: Inclination to shun company or society; frequently being missed from the company of the family, or others with whom he or she is associated; becoming timid and bashful, and shunning the society of the opposite sex; the face is apt to be pale and often a bluish or purplish streak under the eyes, while the eyes themselves look dull and languid and the edges of the eyelids often become red and sore; the person can not look any one steadily in the face, but will drop the eyes or turn away from your gaze as if guilty of something mean.

The health soon becomes noticeably impaired; there will be general debility, a slowness of growth, weakness in the lower limbs, nervousness and unsteadiness of the hands, loss of memory, forgetfulness and inability to study or learn, a restless disposition, weak eyes and loss of sight, headache and inability to sleep, or wakefulness. Next come sore eyes, blindness, stupidity, consumption, spinal affection, emaciation, involuntary seminal emissions, loss of all energy or spirit, insanity and idiocy—the hopeless ruin of both body and mind. These latter results do not always follow. Yet they or some of them do often occur as the direct consequences of the pernicious habit.

The subject is an important one. Few, perhaps, ever think, or ever know, how many of the unfortunate inmates of our lunatic asylums have been sent there by this dreadful vice. Were the whole truth upon this subject known, it would alarm parents, as well as the guilty victims of the vice, more even than the dread of the cholera or small-pox.

Preventive Measures—When the parents are satisfied that their child is indulging in this habit, *take immediate measures to break it up*. It is a delicate matter for parents, especially for a father, to speak to his son about. It is different with the mother; she can more readily speak to a daughter upon subjects of that nature, and if guilty, portray to her the danger, the evil consequences and ruin which must result if the habit is not at once and

forever abandoned. If persuasion and instruction will not do, other measures, such as will prove efficient, must be resorted to.

In case of a son, perhaps the better way will be for the services of the family physician to be engaged. He can portray to the misguided young man the horrors and evils of the habit in their bearing, and his caution and advice will have weight.

How to Detect and Prevent Secret Vice.—Examination of the linen is usually conclusive evidence in the case of boys. The genital organs, too, receive an undue share of attention. The patient should be constantly watched during the day until he falls asleep at night, and be required to arise directly he wakes in the morning. In confirmed cases the night-dress should be so arranged that the hands cannot touch the genital organs.

Under no circumstances should nurses ever be permitted unnecessarily to *handle or expose the genital organs of children*, and children should be taught at the very earliest period that it is immodest and even wrong, to handle the parts. When at school, as well as at home, *every boy should have a separate bed*. The neglect of this important advice is a frequent cause of bad habits being taught and practiced. In addition to a separate bed, he should be able to dress and undress apart from the observation of others. The necessary privacy may be secured by partitions placed between the beds, but not extending up to the ceiling, so as to interfere as little as possible with the ventilation. One of the few articles necessary in the sleeping room is a *sponge bath*. This, with a good-sized piece of honeycomb sponge, and a large towel or sheet, complete the outfit. The regular daily use of the sponge bath conduces greatly to the cure or prevention of self-abuse. The too free use of meat, highly-seasoned dishes, coffee, wine, late suppers, etc., strongly tend to excite animal propensities, which directly predispose to vice.

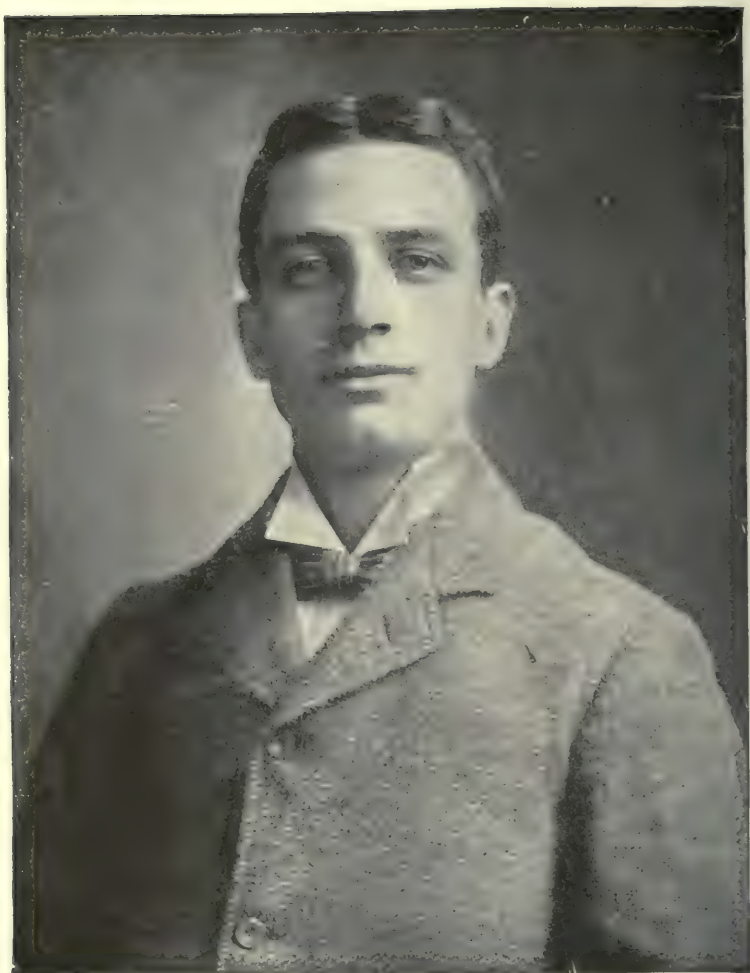
A Terrible Evil.—*In the City of Chicago in one school, an investigation proved that over sixty children under thirteen years of age were habitually practicing this degrading, health and life destroying habit, while among the older ones the habit was even worse, though not so easily detected.*

In a country school in Black Hawk Co., Iowa, one bad boy secretly taught all the rest until the entire school practiced this private vice during the noon hour when the teacher was away.

In New Orleans nearly all the pupils in a large female boarding school were practicing this horrible vice and the scandal of the fearful discovery is not yet forgotten.

Worth Millions.—*The foregoing article on self-abuse should be in the hands of every young person as it would be the means of saving many bright intellects from becoming stupid or imbeciles, or lunatics or from filling premature graves and be worth to them more than Astor's millions.*





D. S. BURTON.

The above is an illustration of D. S. Burton of Harris, Pa., before the habits of secret vice had begun to tell on him.

The illustration on the following page shows the same young man three years later taken when he had become an inveterate victim of the vice.



D. S. BURTON.

The doctor's opinion was: "If this young man escapes the asylum he and his parents will be fortunate."

The instructions in this volume will save many a young man from swelling the list of the unfortunates that are in the asylums all over the country.

PARENTS MAY REGULATE THE SEX OF THE CHILD AT WILL.

Every intelligent person who has kept up with the modern advance in scientific and practical discovery knows that it has been proven beyond any reasonable doubt that all parents possess the power to regulate the sex of the coming children at their pleasure.

Ever since the time of Jacob, the son of Abraham, there have been men who knew how to determine and influence the sex of the increase in their flocks and herds, but it has remained for modern times to demonstrate that a modification of the same law that governs this matter in the brute creation applies equally to the human family.

Had they known this law certain families who now have all daughters might precisely as well have had one or more sons in the place of as many daughters, or vice versa. Nature never works at haphazard but always along fixed lines, determined by inexorable laws.

The following is an article on this subject by Dr. John Van Moile.

"This subject, novel as it may appear to some, has been for many centuries past, an object of meditation and study; and extensive experiments have been made for a great number of years in several of the European states to hasten its elucidation, and foremost among those we find England, France and Belgium. Those experiments, at first made for the advancement of science only, have, of late years, become objects of speculation, and the knowledge of their results of very great value to the raisers of fine horses and cattle. We could not in so short a paper as this give the full history of those experiments; a simple glance at the main points being, we deem it, sufficient to derive the necessary conclusions for the design of our theme. The governments of the states just mentioned have instituted establishments for the purpose of raising and improving horses, cattle and other animals, and men of science have deduced from close observations, and results carefully recorded for many years, the following facts:

"1. That the young obtained from a mare, cow or sheep, etc., when very young was generally a male, when the male employed was of mature age, healthy and strong.

"2. When the female is of mature age, strong, healthy and well fed, the young is more commonly female, when the male employed is young, weak, or exhausted by too often repeated copulation.

"3. That the young obtained from the same when at mature age, strong, healthy and well fed, was in nearly equal proportion, when the male employed was in a similar condition.

"4. That the young brought forth when the female is old are generally males, when the male employed is young and strong.

"5. That the young obtained from females, when in pride, being well fed and young, were generally females, when the male was not in pride, or when ill fed, or exhausted by frequent copulation, or too old.

"6. That the young obtained from the same, when ill fed and not in pride, were generally males, when the male was well fed, young

healthy, strong and in full heat.

"7. That if the female was exhausted by labor, or forced exertion, the young would be generally male, should the male employed be kept in and well fed.

"8. That the young would be female, should the female be kept at rest, and the male exhausted by labor or forced exertion.

"9. To conclude—that the offspring would more generally be male or female, according to their respective physical and procreative abilities (age being taken into consideration).

"From the preceding statements we derive the following deductions: Man being an animal, having physical and procreative faculties analogous to those of the brutes, if a set of phenomena take place among these, the same must necessarily be produced in the human species, and if certain conditions of the physical body affect the offspring, the same physical conditions must affect the offspring in man.

When it is desired to bless the household with a male child, the husband should take good substantial food, moderate exercise, pass his time pleasantly in the gay society of women, read amusing books, and abstain from cohabitation for a time previous to the procreative period. During the same time the expectant wife should live sparingly, particularly on vegetables, fatigue herself every day, take some medicines that reduce the sexual passion, and pass her time in the dry society of old women." A common and convenient remedy for this purpose is lupulin the yellow powder obtained by threshing hops. It should be taken in doses of six to ten grains, two or three times a day. It can also be found at drug stores. Or use spirits of camphor in two drop doses on sugar, three or four times a day; also add half a teaspoonful of baking soda to a teacupful of water, and drink it during the day.

"To have female children, the opposite should be observed; the woman should partake freely of stimulating food, using spices freely, etc., but should restrain her passion and preserve its whole force for the desired time; the male or husband, on the contrary, should reduce his physical abilities by actual labor, and at the same time reduce his procreative propensities by frequent, copious cold ablutions."—[*John E. Van Molle, A. M.*

HE WOULD GIVE A FORTUNE.

How often parents having only daughters, are eager to have a son, or having sons, long for a daughter. They can secure their wishes through the invaluable information contained in the above chapter on REGULATING THE SEXES AT WILL. It has proved successful in thousands of cases both in this country and in Europe, and not only with human offspring, but likewise in the breeding of horses, cattle and other animals

J. W. STREETER, OF PHILADELPHIA, WRITES: "I HAVE TESTED THIS SYSTEM OF REGULATING THE SEXES AT WILL TO MY ENTIRE SATISFACTION AND FIND IT TO BE ABSOLUTELY CORRECT. WE HAVE THREE BOYS AND TWO GIRLS, BORN A BOY OR GIRL EACH TIME JUST AS WE DESIRED IT."

WM. S. COOK, OF THE SAME CITY, STATES: "WE HAVE BEEN TESTING THIS SYSTEM OF REGULATING THE SEXES OF OUR CHILDREN FOR THE PAST TWELVE YEARS AND HAVE SUCCEEDED WITH OUR FOUR CHILDREN IN HAVING THE SEXES WE PREFERRED."

CONCEPTIONAL PERIOD.

No other one thing tends so strongly to bind and hold the early affection of a married couple as the bringing into the world of beautiful, healthy, intelligent, welcome children. To bring into the world unwelcome children is one of the most awful crimes of which the parents can be guilty. It brings a curse to the child, to the parents and to the world.

But every couple may have intelligent, attractive and sweet children, if they will obey the laws of nature in the period previous to conception and during at least the first six months of the period of gestation.

Every young couple intending to enter the marriage relation should know fully what a terrible curse they are liable to transmit to their future children through ignorance of the vital principles that regulate reproduction. In the first place, no one should ever allow such a thing to happen accidentally. Physical and mental preparation should always precede that supremely important moment that may mean welfare or woe to a future human soul.

It is of the utmost importance that the body and the mind of both parents be prepared for some days or weeks before the moment of conception. Antenatal influences help, but the tendency is already implanted with the seed and the ovum at the time of conception. More than a year before the birth of the great Napoleon both his parents were absorbed in study of battle and conquest. The result was apparent. Could we know the story about all our great heroes and heroines we should doubtless find that in every instance, as we certainly do in so many, the force and power that actuated them was given by the parents, either through force of circumstances or by design, previous to the time the child was conceived.

If you desire beautiful children, fix your thoughts on beautiful things. If your desires lean more toward the intellect, employ your thoughts in study, and so in other directions. If the parents themselves are not pure in body, heart and soul, at the time of conception, they cannot hope to transmit these qualities. This attended to, it then remains with the mother to mold the infant growing within her by being herself at that time what she would like her child to be. If she does this, she can no more prevent its mighty influence upon the character of the child than she can prevent the sun from rising. And this works, unconsciously of course, both ways. Hence the terrible significance and importance of understanding and obeying this law of nature.

TABLE OF MONTHLY PERIODS.

Menses begins.	Menses ends.	Fruitful Pe- riod Begins	Fruitful Pe- riod ends	Barren Pe- riod Begins.	Barren Pe- riod ends
Feb ... 1	Feb.... 5	Feb.... 6	Feb....20	Feb....21	Feb....28
" ... 2	" ... 6	" ... 7	" ...21	" ...22	Mar.... 1
" ... 3	" ... 7	" ... 8	" ...22	" ...23	" ... 2
" ... 4	" ... 8	" ... 9	" ...23	" ...24	" ... 3
" ... 5	" ... 9	" ...10	" ...24	" ...25	" ... 4
" ... 6	" ...10	" ...11	" ...25	" ...26	" ... 5
" ... 7	" ...11	" ...12	" ...26	" ...27	" ... 6
" ... 8	" ...12	" ...13	" ...27	" ...28	" ... 7
" ... 9	" ...13	" ...14	" ...28	Mar ... 1	" ... 8
" ...10	" ...14	" ...15	Mar ... 1	" ... 2	" ... 9
" ...11	" ...15	" ...16	" ... 2	" ... 3	" ...10
" ...12	" ...16	" ...17	" ... 3	" ... 4	" ...11
" ...13	" ...17	" ...18	" ... 4	" ... 5	" ...12
" ...14	" ...18	" ...19	" ... 5	" ... 6	" ...13
" ...15	" ...19	" ...20	" ... 6	" ... 7	" ...14
" ...16	" ...20	" ...21	" ... 7	" ... 8	" ...15
" ...17	" ...21	" ...22	" ... 8	" ... 9	" ...16
" ...18	" ...22	" ...23	" ... 9	" ...10	" ...17
" ...19	" ...23	" ...24	" ...10	" ...11	" ...18
" ...20	" ...24	" ...25	" ...11	" ...12	" ...19
" ...21	" ...25	" ...26	" ...12	" ...13	" ...20
" ...22	" ...26	" ...27	" ...13	" ...14	" ...21
" ...23	" ...27	" ...28	" ...14	" ...15	" ...22
" ...24	" ...28	Mar ... 1	" ...15	" ...16	" ...23
" ...25	Mar ... 1	" ... 2	" ...16	" ...17	" ...24
" ...26	" ... 2	" ... 3	" ...17	" ...18	" ...25
" ...27	" ... 3	" ... 4	" ...18	" ...19	" ...26
" ...28	" ... 4	" ... 5	" ...19	" ...20	" ...27
Mar ... 1	" ... 5	" ... 6	" ...20	" ...21	" ...28
" ... 2	" ... 6	" ... 7	" ...21	" ...22	" ...29
" ... 3	" ... 7	" ... 8	" ...22	" ...23	" ...30
" ... 4	" ... 8	" ... 9	" ...23	" ...24	" ...31
" ... 5	" ... 9	" ...10	" ...24	" ...25	Apr ... 1
" ... 6	" ...10	" ...11	" ...25	" ...26	" ... 2
" ... 7	" ...11	" ...12	" ...26	" ...27	" ... 3
" ... 8	" ...12	" ...13	" ...27	" ...28	" ... 4
" ... 9	" ...13	" ...14	" ...28	" ...29	" ... 5
" ...10	" ...14	" ...15	" ...29	" ...30	" ... 6
" ...11	" ...15	" ...16	" ...30	" ...31	" ... 7
" ...12	" ...16	" ...17	" ...31	Apr ... 1	" ... 8
" ...13	" ...17	" ...18	Apr ... 1	" ... 2	" ... 9
" ...14	" ...18	" ...19	" ... 2	" ... 3	" ...10
" ...15	" ...19	" ...20	" ... 3	" ... 4	" ...11
" ...16	" ...20	" ...21	" ... 4	" ... 5	" ...12
" ...17	" ...21	" ...22	" ... 5	" ... 6	" ...13
" ...18	" ...22	" ...23	" ... 6	" ... 7	" ...14
" ...19	" ...23	" ...24	" ... 7	" ... 8	" ...15
" ...20	" ...24	" ...25	" ... 8	" ... 9	" ...16
" ...21	" ...25	" ...26	" ... 9	" ...10	" ...17
" ...22	" ...26	" ...27	" ...10	" ...11	" ...18
" ...23	" ...27	" ...28	" ...11	" ...12	" ...19
" ...24	" ...28	" ...29	" ...12	" ...13	" ...20
" ...25	" ...29	" ...30	" ...13	" ...14	" ...21
" ...26	" ...30	" ...31	" ...14	" ...15	" ...22
" ...27	" ...31	Apr.... 1	" ...15	" ...16	" ...23

TABLE OF MONTHLY PERIODS.

Menses begins.	Menses ends.	Fruitful Pe- riod Begins	Fruitful Pe- riod ends	Barren Pe- riod Begins.	Barren Pe- riod ends
Mar...28	Apr ... 1	Apr.... 2	pr....16	Apr....17	Apr .. 24
"...29	"... 2	"... 3	"...17	"...18	"...25
"...30	"... 3	"... 4	"...18	"...19	"...26
"...31	"... 4	"... 5	"...19	"...20	"...27
Apr ... 1	"... 5	"... 6	"...20	"...21	"...28
"... 2	"... 6	"... 7	"...21	"...22	"...29
"... 3	"... 7	"... 8	"...22	"...23	"...30
"... 4	"... 8	"... 9	"...23	"...24	May... 1
"... 5	"... 9	"...10	"...24	"...25	"... 2
"... 6	"...10	"...11	"...25	"...26	"... 3
"... 7	"...11	"...12	"...26	"...27	"... 4
"... 8	"...12	"...13	"...27	"...28	"... 5
"... 9	"...13	"...14	"...28	"...29	"... 6
"...10	"...14	"...15	"...29	"...30	"... 7
"...11	"...15	"...16	"...30	May... 1	"... 8
"...12	"...16	"...17	May... 1	"... 2	"... 9
"...13	"...17	"...18	"... 2	"... 3	"...10
"...14	"...18	"...19	"... 3	"... 4	"...11
"...15	"...19	"...20	"... 4	"... 5	"...12
"...16	"...20	"...21	"... 5	"... 6	"...13
"...17	"...21	"...22	"... 6	"... 7	"...14
"...18	"...22	"...23	"... 7	"... 8	"...15
"...19	"...23	"...24	"... 8	"... 9	"...16
"...20	"...24	"...25	"... 9	"...10	"...17
"...21	"...25	"...26	"...10	"...11	"...18
"...22	"...26	"...27	"...11	"...12	"...19
"...23	"...27	"...28	"...12	"...13	"...20
"...24	"...28	"...29	"...13	"...14	"...21
"...25	"...29	"...30	"...14	"...15	"...22
"...26	"...30	May... 1	"...15	"...16	"...23
"...27	May... 1	"... 2	"...16	"...17	"...24
"...28	"... 2	"... 3	"...17	"...18	"...25
"...29	"... 3	"... 4	"...18	"...19	"...26
"...30	"... 4	"... 5	"...19	"...20	"...27
May... 1	"... 5	"... 6	"...20	"...21	"...28
"... 2	"... 6	"... 7	"...21	"...22	"...29
"... 3	"... 7	"... 8	"...22	"...23	"...30
"... 4	"... 8	"... 9	"...23	"...24	"...31
"... 5	"... 9	"...10	"...24	"...25	June... 1
"... 6	"...10	"...11	"...25	"...26	"... 2
"... 7	"...11	"...12	"...26	"...27	"... 3
"... 8	"...12	"...13	"...27	"...28	"... 4
"... 9	"...13	"...14	"...28	"...29	"... 5
"...10	"...14	"...15	"...29	"...30	"... 6
"...11	"...15	"...16	"...30	"...31	"... 7
"...12	"...16	"...17	"...31	June... 1	"... 8
"...13	"...17	"...18	June... 1	"... 2	"... 9
"...14	"...18	"...19	"... 2	"... 3	"...10
"...15	"...19	"...20	"... 3	"... 4	"...11
"...16	"...20	"...21	"... 4	"... 5	"...12
"...17	"...21	"...22	"... 5	"... 6	"...13
"...18	"...22	"...23	"... 6	"... 7	"...14
"...19	"...23	"...24	"... 7	"... 8	"...15
"...20	"...24	"...25	"... 8	"... 9	"...16
"...21	"...25	"...26	"... 9	"...10	"...17

TABLE OF MONTHLY PERIODS.

Menses begins.	Menses ends.	Fruitful Pe- riod Begins	Fruitful Pe- riod ends	Barren Pe- riod Begins.	Barren Pe- riod ends
May... 22	May... 26	May... 27	June .. 10	June... 11	June... 18
"... 23	"... 27	"... 28	"... 11	"... 12	"... 19
"... 24	"... 28	"... 29	"... 12	"... 13	"... 20
"... 25	"... 29	"... 30	"... 13	"... 14	"... 21
"... 26	"... 30	"... 31	"... 14	"... 15	"... 22
"... 27	"... 31	June... 1	"... 15	"... 16	"... 23
"... 28	June... 1	"... 2	"... 16	"... 17	"... 24
"... 29	"... 2	"... 3	"... 17	"... 18	"... 25
"... 30	"... 3	"... 4	"... 18	"... 19	"... 26
"... 31	"... 4	"... 5	"... 19	"... 20	"... 27
June... 1	"... 5	"... 6	"... 20	"... 21	"... 28
"... 2	"... 6	"... 7	"... 21	"... 22	"... 29
"... 3	"... 7	"... 8	"... 22	"... 23	"... 30
"... 4	"... 8	"... 9	"... 23	"... 24	July... 1
"... 5	"... 9	"... 10	"... 24	"... 25	"... 2
"... 6	"... 10	"... 11	"... 25	"... 26	"... 3
"... 7	"... 11	"... 12	"... 26	"... 27	"... 4
"... 8	"... 12	"... 13	"... 27	"... 28	"... 5
"... 9	"... 13	"... 14	"... 28	"... 29	"... 6
"... 10	"... 14	"... 15	"... 29	"... 30	"... 7
"... 11	"... 15	"... 16	"... 30	July... 1	"... 8
"... 12	"... 16	"... 17	July... 1	"... 2	"... 9
"... 13	"... 17	"... 18	"... 2	"... 3	"... 10
"... 14	"... 18	"... 19	"... 3	"... 4	"... 11
"... 15	"... 19	"... 20	"... 4	"... 5	"... 12
"... 16	"... 20	"... 21	"... 5	"... 6	"... 13
"... 17	"... 21	"... 22	"... 6	"... 7	"... 14
"... 18	"... 22	"... 23	"... 7	"... 8	"... 15
"... 19	"... 23	"... 24	"... 8	"... 9	"... 16
"... 20	"... 24	"... 25	"... 9	"... 10	"... 17
"... 21	"... 25	"... 26	"... 10	"... 11	"... 18
"... 22	"... 26	"... 27	"... 11	"... 12	"... 19
"... 23	"... 27	"... 28	"... 12	"... 13	"... 20
"... 24	"... 28	"... 29	"... 13	"... 14	"... 21
"... 25	"... 29	"... 30	"... 14	"... 15	"... 22
"... 26	"... 30	July... 1	"... 15	"... 16	"... 23
"... 27	July... 1	"... 2	"... 16	"... 17	"... 24
"... 28	"... 2	"... 3	"... 17	"... 18	"... 25
"... 29	"... 3	"... 4	"... 18	"... 19	"... 26
"... 30	"... 4	"... 5	"... 19	"... 20	"... 27
July... 1	"... 5	"... 6	"... 20	"... 21	"... 28
"... 2	"... 6	"... 7	"... 21	"... 22	"... 29
"... 3	"... 7	"... 8	"... 22	"... 23	"... 30
"... 4	"... 8	"... 9	"... 23	"... 24	"... 31
"... 5	"... 9	"... 10	"... 24	"... 25	Aug... 1
"... 6	"... 10	"... 11	"... 25	"... 26	"... 2
"... 7	"... 11	"... 12	"... 26	"... 27	"... 3
"... 8	"... 12	"... 13	"... 27	"... 28	"... 4
"... 9	"... 13	"... 14	"... 28	"... 29	"... 5
"... 10	"... 14	"... 15	"... 29	"... 30	"... 6
"... 11	"... 15	"... 16	"... 30	"... 31	"... 7
"... 12	"... 16	"... 17	"... 31	Aug... 1	"... 8
"... 13	"... 17	"... 18	Aug... 1	"... 2	"... 9
"... 14	"... 18	"... 19	"... 2	"... 3	"... 10
"... 15	"... 19	"... 20	"... 3	"... 4	"... 11

TABLE OF MONTHLY PERIODS.

Menses begins.	Menses ends.	Fruitful Pe- riod Begins	Fruitful Pe- riod ends	Barren Pe- riod Begins.	Barren Pe- riod ends
July....16	July .. 20	July....21	Aug.... 4	Aug.... 5	Aug....12
".....17	".....21	".....22	"..... 5	"..... 6	".....13
".....18	".....22	".....23	"..... 6	"..... 7	".....14
".....19	".....23	".....24	"..... 7	"..... 8	".....15
".....20	".....24	".....25	"..... 8	"..... 9	".....16
".....21	".....25	".....26	"..... 9	".....10	".....17
".....22	".....26	".....27	".....10	".....11	".....18
".....23	".....27	".....28	".....11	".....12	".....19
".....24	".....28	".....29	".....12	".....13	".....20
".....25	".....29	".....30	".....13	".....14	".....21
".....26	".....30	".....31	".....14	".....15	".....22
".....27	".....31	Aug.... 1	".....15	".....16	".....23
".....28	Aug.... 1	"..... 2	".....16	".....17	".....24
".....29	"..... 2	"..... 3	".....17	".....18	".....25
".....30	"..... 3	"..... 4	".....18	".....19	".....26
".....31	"..... 4	"..... 5	".....19	".....20	".....27
Aug.... 1	"..... 5	"..... 6	".....20	".....21	".....28
"..... 2	"..... 6	"..... 7	".....21	".....22	".....29
"..... 3	"..... 7	"..... 8	".....22	".....23	".....30
"..... 4	"..... 8	"..... 9	".....23	".....24	".....31
"..... 5	"..... 9	".....10	".....24	".....25	Sept.... 1
"..... 6	".....10	".....11	".....25	".....26	"..... 2
"..... 7	".....11	".....12	".....26	".....27	"..... 3
"..... 8	".....12	".....13	".....27	".....28	"..... 4
"..... 9	".....13	".....14	".....28	".....29	"..... 5
".....10	".....14	".....15	".....29	".....30	"..... 6
".....11	".....15	".....16	".....30	".....31	"..... 7
".....12	".....16	".....17	".....31	Sept.... 1	"..... 8
".....13	".....17	".....18	Sept.... 1	"..... 2	"..... 9
".....14	".....18	".....19	"..... 2	"..... 3	".....10
".....15	".....19	".....20	"..... 3	"..... 4	".....11
".....16	".....20	".....21	"..... 4	"..... 5	".....12
".....17	".....21	".....22	"..... 5	"..... 6	".....13
".....18	".....22	".....23	"..... 6	"..... 7	".....14
".....19	".....23	".....24	"..... 7	"..... 8	".....15
".....20	".....24	".....25	"..... 8	"..... 9	".....16
".....21	".....25	".....26	"..... 9	".....10	".....17
".....22	".....26	".....27	".....10	".....11	".....18
".....23	".....27	".....28	".....11	".....12	".....19
".....24	".....28	".....29	".....12	".....13	".....20
".....25	".....29	".....30	".....13	".....14	".....21
".....26	".....30	".....31	".....14	".....15	".....22
".....27	".....31	Sept.... 1	".....15	".....16	".....23
".....28	Sept.... 1	"..... 2	".....16	".....17	".....24
".....29	"..... 2	"..... 3	".....17	".....18	".....25
".....30	"..... 3	"..... 4	".....18	".....19	".....26
".....31	"..... 4	"..... 5	".....19	".....20	".....27
Sept.... 1	"..... 5	"..... 6	".....20	".....21	".....28
"..... 2	"..... 6	"..... 7	".....21	".....22	".....29
"..... 3	"..... 7	"..... 8	".....22	".....23	".....30
"..... 4	"..... 8	"..... 9	".....23	".....24	Oct.... 1
"..... 5	"..... 9	".....10	".....24	".....25	"..... 2
"..... 6	".....10	".....11	".....25	".....26	"..... 3
"..... 7	".....11	".....12	".....26	".....27	"..... 4
"..... 8	".....12	".....13	".....27	".....28	"..... 5

TABLE OF MONTHLY PERIODS.

Menses begins.	Menses ends.	Fruitful Pe- riod Begins	Fruitful Pe- riod ends	Barren Pe- riod Begins.	Barren Pe- riod ends
Sept.... 9	Sept... 13	Sept.... 14	Sept.... 28	Sept... 29	Oct.... 6
".... 10	".... 14	".... 15	".... 29	".... 30	".... 7
".... 11	".... 15	".... 16	".... 30	Oct.... 1	".... 8
".... 12	".... 16	".... 17	Oct.... 1	".... 2	".... 9
".... 13	".... 17	".... 18	".... 2	".... 3	".... 10
".... 14	".... 18	".... 19	".... 3	".... 4	".... 11
".... 15	".... 19	".... 20	".... 4	".... 5	".... 12
".... 16	".... 20	".... 21	".... 5	".... 6	".... 13
".... 17	".... 21	".... 22	".... 6	".... 7	".... 14
".... 18	".... 22	".... 23	".... 7	".... 8	".... 15
".... 19	".... 23	".... 24	".... 8	".... 9	".... 16
".... 20	".... 24	".... 25	".... 9	".... 10	".... 17
".... 21	".... 25	".... 26	".... 10	".... 11	".... 18
".... 22	".... 26	".... 27	".... 11	".... 12	".... 19
".... 23	".... 27	".... 28	".... 12	".... 13	".... 20
".... 24	".... 28	".... 29	".... 13	".... 14	".... 21
".... 25	".... 29	".... 30	".... 14	".... 15	".... 22
".... 26	".... 30	Oct.... 1	".... 15	".... 16	".... 23
".... 27	Oct... 1	".... 2	".... 16	".... 17	".... 24
".... 28	".... 2	".... 3	".... 17	".... 18	".... 25
".... 29	".... 3	".... 4	".... 18	".... 19	".... 26
".... 30	".... 4	".... 5	".... 19	".... 20	".... 27
Oct... 1	".... 5	".... 6	".... 20	".... 21	".... 28
".... 2	".... 6	".... 7	".... 21	".... 22	".... 29
".... 3	".... 7	".... 8	".... 22	".... 23	".... 30
".... 4	".... 8	".... 9	".... 23	".... 24	".... 31
".... 5	".... 9	".... 10	".... 24	".... 25	Nov.... 1
".... 6	".... 10	".... 11	".... 25	".... 26	".... 2
".... 7	".... 11	".... 12	".... 26	".... 27	".... 3
".... 8	".... 12	".... 13	".... 27	".... 28	".... 4
".... 9	".... 13	".... 14	".... 28	".... 29	".... 5
".... 10	".... 14	".... 15	".... 29	".... 30	".... 6
".... 11	".... 15	".... 16	".... 30	".... 31	".... 7
".... 12	".... 16	".... 17	".... 31	Nov... 1	".... 8
".... 13	".... 17	".... 18	Nov.... 1	".... 2	".... 9
".... 14	".... 18	".... 19	".... 2	".... 3	".... 10
".... 15	".... 19	".... 20	".... 3	".... 4	".... 11
".... 16	".... 20	".... 21	".... 4	".... 5	".... 12
".... 17	".... 21	".... 22	".... 5	".... 6	".... 13
".... 18	".... 22	".... 23	".... 6	".... 7	".... 14
".... 19	".... 23	".... 24	".... 7	".... 8	".... 15
".... 20	".... 24	".... 25	".... 8	".... 9	".... 16
".... 21	".... 25	".... 26	".... 9	".... 10	".... 17
".... 22	".... 26	".... 27	".... 10	".... 11	".... 18
".... 23	".... 27	".... 28	".... 11	".... 12	".... 19
".... 24	".... 28	".... 29	".... 12	".... 13	".... 20
".... 25	".... 29	".... 30	".... 13	".... 14	".... 21
".... 26	".... 30	".... 31	".... 14	".... 15	".... 22
".... 27	".... 31	Nov.... 1	".... 15	".... 16	".... 23
".... 28	Nov.... 1	".... 2	".... 16	".... 17	".... 24
".... 29	".... 2	".... 3	".... 17	".... 18	".... 25
".... 30	".... 3	".... 4	".... 18	".... 19	".... 26
".... 31	".... 4	".... 5	".... 19	".... 20	".... 27
Nov.... 1	".... 5	".... 6	".... 20	".... 21	".... 28
".... 2	".... 6	".... 7	".... 21	".... 22	".... 29

TABLE OF MONTHLY PERIODS.

Menses begins.	Menses ends.	Fruitful Pe- riod Begins	Fruitful Pe- riod ends	Barren Pe- riod Begins.	Barren Pe- riod ends
Nov.... 3	Nov.... 7	Nov.... 8	Nov... 22	Nov... 23	Nov... 30
" 4	" 8	" 9	" 23	" 24	Dec.... 1
" 5	" 9	" 10	" 24	" 25	" 2
" 6	" 10	" 11	" 25	" 26	" 3
" 7	" 11	" 12	" 26	" 27	" 4
" 8	" 12	" 13	" 27	" 28	" 5
" 9	" 13	" 14	" 28	" 29	" 6
" 10	" 14	" 15	" 29	" 30	" 7
" 11	" 15	" 16	" 30	Dec.... 1	" 8
" 12	" 16	" 17	Dec.... 1	" 2	" 9
" 13	" 17	" 18	" 2	" 3	" 10
" 14	" 18	" 19	" 3	" 4	" 11
" 15	" 19	" 20	" 4	" 5	" 12
" 16	" 20	" 21	" 5	" 6	" 13
" 17	" 21	" 22	" 6	" 7	" 14
" 18	" 22	" 23	" 7	" 8	" 15
" 19	" 23	" 24	" 8	" 9	" 16
" 20	" 24	" 25	" 9	" 10	" 17
" 21	" 25	" 26	" 10	" 11	" 18
" 22	" 26	" 27	" 11	" 12	" 19
" 23	" 27	" 28	" 12	" 13	" 20
" 24	" 28	" 29	" 13	" 14	" 21
" 25	" 29	" 30	" 14	" 15	" 22
" 26	" 30	Dec.... 1	" 15	" 16	" 23
" 27	Dec.... 1	" 2	" 16	" 17	" 24
" 28	" 2	" 3	" 17	" 18	" 25
" 29	" 3	" 4	" 18	" 19	" 26
" 30	" 4	" 5	" 19	" 20	" 27
Dec .. 1	" 5	" 6	" 20	" 21	" 28
" 2	" 6	" 7	" 21	" 22	" 29
" 3	" 7	" 8	" 22	" 23	" 30
" 4	" 8	" 9	" 23	" 24	" 31
" 5	" 9	" 10	" 24	" 25	Jan... 1
" 6	" 10	" 11	" 25	" 26	" 2
" 7	" 11	" 12	" 26	" 27	" 3
" 8	" 12	" 13	" 27	" 28	" 4
" 9	" 13	" 14	" 28	" 29	" 5
" 10	" 14	" 15	" 29	" 30	" 6
" 11	" 15	" 16	" 30	" 31	" 7
" 12	" 16	" 17	" 31	Jan .. 1	" 8
" 13	" 17	" 18	Jan.... 1	" 2	" 9
" 14	" 18	" 19	" 2	" 3	" 10
" 15	" 19	" 20	" 3	" 4	" 11
" 16	" 20	" 21	" 4	" 5	" 12
" 17	" 21	" 22	" 5	" 6	" 13
" 18	" 22	" 23	" 6	" 7	" 14
" 19	" 23	" 24	" 7	" 8	" 15
" 20	" 24	" 25	" 8	" 9	" 16
" 21	" 25	" 26	" 9	" 10	" 17
" 22	" 26	" 27	" 10	" 11	" 18
" 23	" 27	" 28	" 11	" 12	" 19
" 24	" 28	" 29	" 12	" 13	" 20
" 25	" 29	" 30	" 13	" 14	" 21
" 26	" 30	" 31	" 14	" 15	" 22
" 27	" 31	Jan.... 1	" 15	" 16	" 23

TABLE OF MONTHLY PERIODS.

Menses begins.	Menses ends.	Fruitful Pe- riod Begins	Fruitful Pe- riod ends	Barren Pe- riod Begins.	Barren Pe- riod ends
Dec....28	Jan.... 1	Jan.... 2	Jan....16	Jan .. 17	Jan....24
" ... 29	" 2	" 3	"17	"18	"25
" ... 30	" 3	" 4	"18	"19	"26
" ... 31	" 4	" 5	"19	"20	"27
Jan .. 1	" 5	" 6	"20	"21	"28
" 2	" 6	" 7	"21	"22	"29
" 3	" 7	" 8	"22	"23	"30
" 4	" 8	" 9	"23	"24	"31
" 5	" 9	"10	"24	"25	Feb.... 1
" 6	"10	"11	"25	"26	" 2
" 7	"11	"12	"26	"27	" 3
" 8	"12	"13	"27	"28	" 4
" 9	"13	"14	"28	"29	" 5
"10	"14	"15	"29	"30	" 6
"11	"15	"16	"30	"31	" 7
"12	"16	"17	"31	Feb.... 1	" 8
"13	"17	"18	Feb ... 1	" 2	" 9
"14	"18	"19	" 2	" 3	"10
"15	"19	"20	" 3	" 4	"11
"16	"20	"21	" 4	" 5	"12
"17	"21	"22	" 5	" 6	"13
"18	"22	"23	" 6	" 7	"14
"19	"23	"24	" 7	" 8	"15
"20	"24	"25	" 8	" 9	"16
"21	"25	"26	" 9	"10	"17
"22	"26	"27	"10	"11	"18
"23	"27	"28	"11	"12	"19
"24	"28	"29	"12	"13	"20
"25	"29	"30	"13	"14	"21
"26	"30	"31	"14	"15	"22
"27	"31	Feb.... 1	"15	"16	"23
"28	Feb .. 1	" 2	"16	"17	"24
"29	" 2	" 3	"17	"18	"25
"30	" 3	" 4	"18	"19	"26
" ... 31	" 4	" 5	"19	"20	"27

KEELEY CURE.

THE BICHLORIDE OF GOLD TREATMENT.

BY CHAUNCEY F. CHAPMAN, M. D., Ph. D.

CLINICAL INSTRUCTOR IN MEDICINE, COLLEGE OF PHYSICIANS AND
SURGEONS OF CHICAGO. MEMBER CHICAGO PATHO-
LOGICAL SOCIETY.

Being determined to find out something definite about the matter I obtained a position as physician to a gold cure sanitarium at a distance from Chicago, and have carefully studied the cure. As I have had personal experience in treating about 300 cases, both in and out of the aforesaid sanitarium, I feel that I am prepared to give you the formula of the gold treatment, which is almost, if not quite, the same in all these institutes, as follows:

No. 1. Tonic. Known in the institutes as the "dope."

R. Aurii et sodii chlorid gr. xii.
Strychniæ nitr gr. 1.
Atropiæ sulp gr. $\frac{1}{4}$.
Ammonii muriat gr. vi.
Aloin gr. i.
Hydrastin gr. ii.
Glycerini ounce i.
Exr. fld. Cinchon. comp " iii.
Ext. fld. Coca. Erythrox " i.
Aquæ dist drachm i.

M. S. 1 dram at 7, 9, 11 a. m., at 1, 3, 5, 7, 9, p. m.

No. 2. The injection known in the institutes as the "shot."

R. Strychniæ nitr gr. 9 1-10
Aquæ destill. ad oz. 4
Potass. permangan. q. s. to color.

Misce. Sig. Begin with gtt. 5, which equals gr. 1-40, and increase one drop each injection until the physiological effect is produced. Four hypodermic injections to be given daily beginning at 8 a. m. then at 12 m., 4 p. m. and 8 p. m.

No. 3. Used with No. 2.

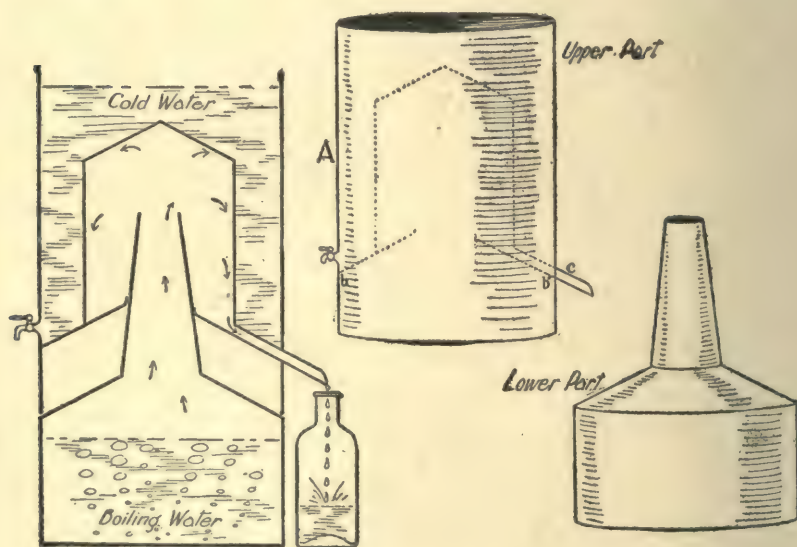
R. Aurii et sodii chlorid gr. 2 $\frac{1}{2}$
Aquæ destill. ad. oz 1.

Misce. Sig. gtt. 3, every four hours, in combination with the strychnine solution, for the first four days.

This last prescription is only used for the moral effect, which is produced in the following manner: Five drops of the strychnine solution are drawn into the syringe, and then three drops of the gold solution are drawn in and mixed. This produces a golden yellow color, to which attention is called, and the patient is further assured as to the reality of the presence of the gold by the stain left on the skin after the hypodermic needle has been removed.

TO MAKE WATER CLEANSER OR STILL.

Any good tinsmith can make out of block tin an apparatus for distilling water at a cost varying from \$2 to \$5 according to size of still. He need make only two pieces following closely the design given in the illustration below. It should be from ten to fifteen inches in width, and height proportional. The "upper part" consists of a tin cylinder "A," open at both ends. Within this is an inverted cylinder, indicated by the dotted lines, and soldered to the outer cylinder at "b" and "b'" all the way around. It must be made watertight all around. The spout "C" can be inserted, or may be made as a part of inner cylinder. The base of this inner cylinder has an opening that fits snugly over the "nose" of the "lower part." The part of cylinder



below "b" and "b'" may be made a separate ring, into which the "upper part" must fit. To aerate the steam, run a small air pipe into the steam chamber.

To prepare *pure* water, fill "lower part" about one-third or one-fourth with as clear and clean water as can be had. Set "upper part" upon it. This should fit snugly upon the spout or "nose" of the "lower part." Keep "upper part" filled with cold water, which should be renewed from time to time if it gets too warm. Set upon stove or over flame so as to cause water in "lower part" to boil. The steam rising through spout into "upper part" is there condensed and flows out of side spout. All the impurities and most of the lime, etc., is left in the "lower part." To make the water of especial purity, it should be redistilled. When doing this, care must be had to carefully clean the "lower part" before putting in the distilled water for redistilling

In this division of the book are full instructions how to

Keep Old Age Matter Out of the System *and*

Maintain, until a ripe old age, the appearance of those in the prime of life.

Medical and scientific men now agree that this can be done to the 100-year limit, by following the instructions set forth, especially those on pages 830 and 839 of this book, and with it the means of prolonging life to a very great age.

*The authors of this book give specific directions how **WRINKLES** may be avoided and **OLD-AGE** look prevented.*



JONATHAN MCGEE AND WIFE.

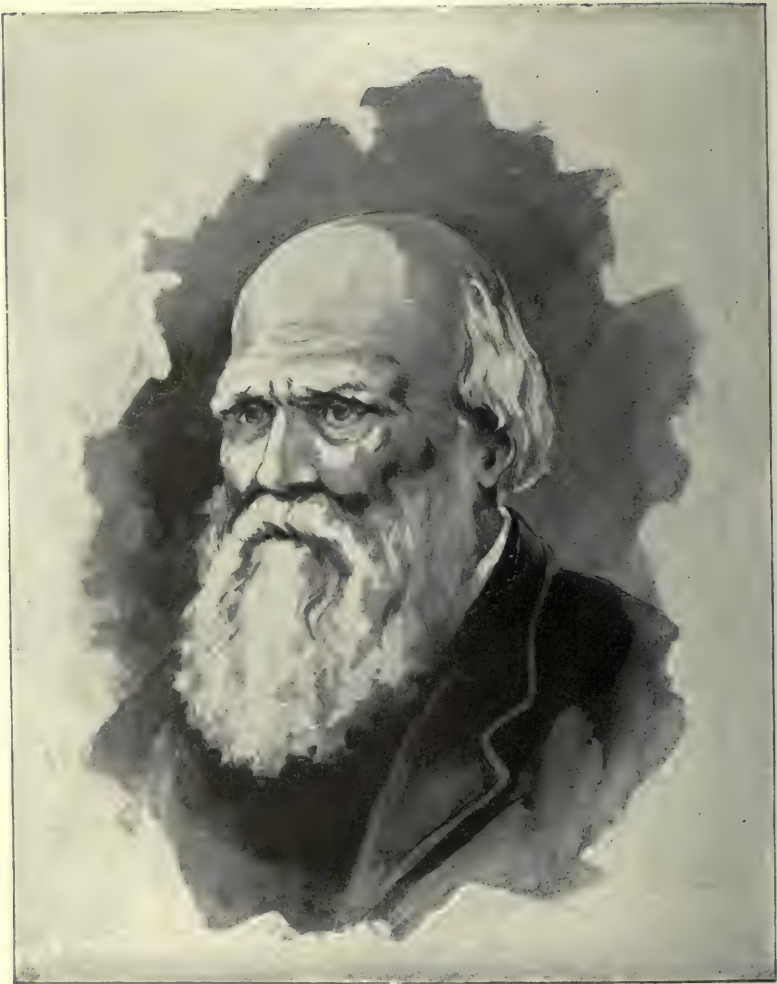
This man was born in 1788 and his wife in 1858. Married at Ypsilanti, Mich., when he was 110 years old. How any one may reach such a hale and hearty age is told on page 149.

He has partaken in the strife of four wars—1812, the Mexican, the Patriot, the Rebellion. He is at this age as spry as a man of forty; his hair is long and curly; his muscles are firm and knotty. His teeth are natural and still good, which he attributes to never having eaten rich food or used tobacco.



DON FRANCISCO GARCIA, *112 yrs.* old,
Resident of California.

It people generally were informed by what simple means (recently discovered), most people could attain the age of 100 to 130 yrs. or more, there would be almost a stampede in that direction. See instructions on pages 149 & 150.



THOMAS PARR, of Shropshire, England,
aged 152 years, 9 months.

HOW TO LIVE OVER 100 YEARS.

Recent Discoveries. Recent investigations have proved that here and there persons have attained the ripe old age of from 125 to 185, one man in Hungary reaching the latter period. While these parties could rarely say by what means they attained such age, more recent discoveries and observations have plainly disclosed the way. By following the very simple method described on pages 149 & 150, almost anyone in ordinary health can add from 20 to 40 years to his life and live to be a centenarian and even more.



PETER ZARTIN OF HUNGARY, AGED 185 YEARS.

He attained this age because he happened to observe, measurably, the rules of prolonging life as indicated on page 149.



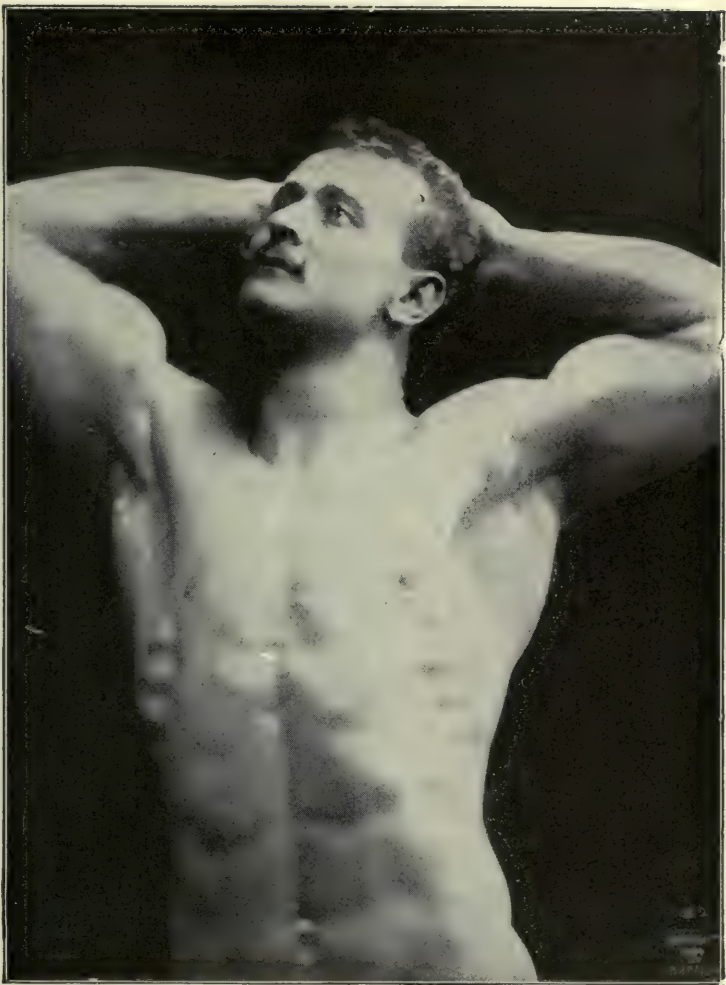
METHUSELAH OF BIBLICAL FAME.

AGED 900 YEARS.

Some people then knew how to live long.
We are just now learning how to prolong life.

THE LAW THAT ENABLED THESE MEN TO LIVE TO SUCH ADVANCED AGES WILL DO THE SAME FOR THOUSANDS MORE.

THE LAWS OF CREATION ARE INEXORABLE. Why these men lived to such ripe ages, and how others may do the same, see page 149.



SANDOW, THE GREAT MUSCULAR GIANT.

THE ARTICLE ON PAGE 239 TELLS WHY

strong men like this powerful man, who could lift 1700 pounds, often die of a disease that a frail man easily pulls through. It also tells how to remedy it.

Scientists tell us that the causes of these strong men's premature death is "an impeded blood circulation, caused by coating and clogging of the blood vessels," rendering them easy victims of disease, and they die from what is termed "Heart Failure." When their blood vessels are kept cleared from these deposits, these strong men—and weaker ones too, can live to a ripe old age, reaching 150 to 200 years or more.



INDIAN CHIEF, BIG BEAR.

This Indian Chief at the age of eighty years had not a grey hair in his head.

The reader will find the Indians' simple mode of preventing baldness or grey hairs on page 712 Vol. I

LIVE 75 YEARS AND 75 MORE.

After we have lived seventy-five years it is perfectly reasonable to add another seventy-five years in reasonable health and spirits. How to live a century and over is briefly told in the following paragraphs:

Oldest Men of Recent Authentic History.—Thomas Parr of Shropshire, England, lived to be 152 years and nine months old. Henry Jenkins of Yorkshire, England, died at the age of 169. John Rovin of Temesvar, Hungary, lived 172 years, his wife 164 years; Peter Zartin of the same place 185 years. Many in the United States attained ripe old ages, notably among whom was Henry Francisco of Whitehall, N. Y., who died in his 135th year.

Eminent scientists assert that man's body under favorable conditions may last 300 years or more.

The bones may endure for 4,000 years.

The lungs " " " 1,500 years.

The skin " " " 1,000 years.

The stomach, heart, liver, each 300 years, or more.

The kidneys 200 years, or more.

The principal reason why men become diseased or die sooner is because of the deposit of *animal soil* or of insoluble solids in the organs of life. Dissecting the body, as well as examination by the wonderful *x-ray* has proved the existence of these deposits in the arteries and veins, in the heart, the liver, the kidneys, the joints, &c. And how did these deposits get there? Almost exactly like the stony or chalky deposit gets on the bottom and sides of your old tea kettle. Look at it. The doctor says "There is ossification of the membranes and the patient cannot live." But *he can live if the cause* of this "ossification" is removed and something given that will gradually absorb and carry off these bony and stony deposits instead of all the time adding a little to them.

And Now the Remedy.—It is certainly the greatest as it is the simplest on earth. Every one knows that all water that touches the earth has taken up (absorbed) some solid impurities. You can put two tablespoonfuls of salt in a glass brimful of water without the water running over if you do it slowly enough. Fresh rain water absorbs filth from the air and also from off the roof and is likewise contaminated. *When you drink the water that holds impurities or mineral solids suspended in it, these solids will as surely leave deposits in your system as they do in your tea kettle.* If you eat food cooked with such water you eat some of the stony matter. You can not escape it. Hence the cure must be found in taking out of the water all this injurious matter before you drink it or cook your food in it. This is done by distilling, done absolutely and fully. Science has proven also that distilled water has a wonderful power of absorbing mineral and animal solids, so that the constant use of pure (distilled) water will not only stop the further life-shortening deposits, but will gradually take up,

absorb and carry off the deposits already in the system. For the water goes through the whole system. Drink a big draught on a hot day and you soon sweat out a goodly portion of it. It had to go all through the body to get from the stomach to the skin. This is the first part of the remedy.

Second part of the Remedy.—Pure water alone would not enable a person to live 200 years in good health. He must *avoid eating food which will leave deposits of animal soil around the kidneys*. Too much meat will do this. The system can use but a small proportion of nitrogen which is the chief food part of meat, the fiber is simply waste. If too much of this waste is taken into the stomach it begins slowly to deposit here and there some of this foul waste. The result after a time is disease caused by the slow poisoning from this deposit. Distilled water dissolves these deposits. So will the free use of ripe fruit, especially apples, peaches, grapes, oranges (the juice not the pulp), cherries, plums and berries.

Dr. Wm. Kinnear wrote as follows (*North American Review*, June, 1893):

"Very few people, it is safe to say, desire old age. We cannot defy death. But we may by searching, find certain secrets of nature and apply them to the renewal of the organs whose decay is constantly going on in the body. Anatomical experiment and investigation show that the chief characteristics of old age are deposits of earthy matter of a gelatinous and fibrinous character in the human system. Carbonate and phosphate of lime, mixed with other salts of a calcareous nature, have been found to furnish the greater part of these earthy deposits. Of course these earthy deposits, which affect all the physical organs, naturally interfere with their functions. Partial ossification of the heart produces the imperfect circulation of the blood, which affects the aged. When the arteries are clogged with calcareous matter there is interference with the circulation upon which nutrition depends. Without nutrition there is no repair of the body. Hence, G. H. Lewes states, that 'if the repair were always identical with the waste, life would only then be terminated by accident, *never by old age*.'

Paradoxical as it may sound, certain foods which we put into our mouths to preserve our lives, help at the same time to hurry us to the inevitable gate of the cemetery. A diet made up of fruit principally is best for people advancing in years, for the reason that being deficient in nitrogen the ossific deposits so much to be dreaded are more likely to be suspended. Moderate eaters have in all cases a much better chance of long life than those addicted to excesses of the table. Mr. De Lacy Evans, who made many careful researches in these regions of science, comes to the conclusion that fruits, fish and poultry, and young mutton and veal contain less of the earthy salts than other articles of food, and are therefore best for people. Beef and old mutton usually are overcharged with salts and should be avoided. If one desires to prolong life, therefore, it seems that moderate eating and a diet containing a minimum amount of earthy particles is most suitable to retard old age by preserving the system from blockages.

The powerful solvent properties of distilled water are well known. As carbonate of lime exists in nearly all drinking water, the careful distillation eliminates this harmful element. As a beverage, distilled water is rapidly absorbed into the blood; it keeps soluble those salts already in the blood and facilitates their excretion, thus preventing their undue deposit. The daily use of distilled water is, after middle life, one of the most important means of preventing secretion and the derangement of health. Hence, to sum up, the most rational modes of keeping physical decay or deterioration at bay, and thus retarding the

approach of old age, are avoiding all foods rich in the earth salts, using much fruit, especially juicy, uncooked apples, and by taking *daily* two or three tumblersful of distilled water."

HISTORY AND WONDERS OF THE X-RAY

as here given should be read by everyone who wishes to keep up with the times. Its help in surgery and in locating internal disease is marvelous.

Genuineness of Precious Stones.—No imitation of gems, no matter how perfect in appearance, can possibly pass the scrutiny of the X-ray.

The X-ray will reveal, accurately, the contents of a trunk or satchel though these be locked and strapped ever so tightly. The would-be smuggler stands no chance of hiding his costly jewels or bric-a-bac from the scrutiny of the customs inspector armed with the X-ray.

Wonderful X-Ray.

In 1895 Prof. W. K. Roentgen, of Wurzburg, Germany, made a discovery of great importance to the medical world and of especial value in surgery. Shorn of all technical terms the discovery was simply that when an electric light was placed in a Crooke's tube (a big, long glass tube from which most of the air had been exhausted) some of the rays of light would pass through dense matter like clothing or wood or leather or flesh, and so light them up as to make these things transparent, that is, it enabled one to see the body through the clothes—to see the bones through the flesh. The light which easily penetrated clothing and flesh would not go through metal or bone. Thus a gloved hand exposed between this ray and a camera would produce a photograph (or skiagraph as it is called) of only the bones, the buttons on the glove and the rings that chanced to be on the finger. Expose the body, and a skiagraph would appear, showing clearly in the picture the internal bones and any irregular or improper piece of bone or any foreign substance of metal or glass or stone. The intervening flesh or clothing would not appear or appear only as an indefinite transparent haze. This Roentgen ray—or as it became generally known, the *x*-ray, because nobody knew what this peculiar ray of light is, and *x* is used in mathematics to represent the unknown or the to-be-found-out—this *x*-ray is rapidly coming into use to determine the presence in the body of sesamoid bones, or of foreign substances such as bullets or pins, needles or other things which may have been accidentally swallowed. It also shows clearly the position of a bone broken or crushed in an accident or otherwise. Shows whether it has been properly set, etc., and especially shows the exact condition of the joints.

Diamonds Detected.—Another use of the *x*-ray is in determining the genuineness of precious stones. Each gem casts its own peculiar shadow when a skiagraph or *x*-ray photograph of it is taken. Thus the pure diamond casts a faint translucent shadow. Any imitation diamond, no matter how perfectly made, throws a picture whose difference is at once apparent. It is much darker. No one could mistake it for an instant.

Danger in the Ray.—In order to secure a “skiagraph” of any part of the body it is necessary to expose the parts for from one to ten minutes, or sometimes fifteen minutes, to the action of the light or *x*-ray. The person, of course, feels absolutely nothing of the effect of the light, which is perhaps two feet away and enclosed in a glass case. But in a week or so, especially after the longer exposure, the place sometimes becomes sore, showing all the effects of a deep burn. The sensation begins by an intense itching; it soon becomes red and inflamed or even blistered and is very sore and slow to heal. It was found, however, that by covering the skin over the place to be exposed to the *x*-ray with glycerine no “burn” resulted.

Diseased Organs Identified.—When an *x*-ray picture is taken the bones and foreign metallic, glass or stony articles, show clearly, but a shadow is also cast by the internal organs, and as these differ in density, their outlines may usually be determined. Whenever any organ is inflamed it will show a darker outline than normal. If enlarged it will be apparent. Thus fevers may be recognized, tumors located or rupture of the walls of an artery detected. By these means medical treatment which was based upon guess-work, often wrong, may be made positive, accurate and successful. If a clot is forming on the brain the *x*-ray will detect it and show the surgeon how to save the patient's life.

OBJECT LESSON OF THE EFFECT OF CIGARETTE SMOKING.

The fearful effects of cigarette smoking upon the stomach and lungs, as elsewhere illustrated, can scarcely be exaggerated. The analysis of the material composing the cigarette, made by prominent chemists and physicians, proves that opium, the extract of tonka beans (which contain a deadly poison), and other injurious substances invariably are used in the manufacture of an acceptable cigarette. What is known as “Havana flavoring” (tonka bean extract), is sold by the thousand barrels. The wrappers, which are popularly known as rice paper, are never made from rice, but, on the contrary, either from common paper, which makes the poorer grades, or from rag scrapings bleached white with arsenic, which makes the better grades. It is all cheap, but chemically foul and highly injurious. Cigarette smoking ruins the memories, the health and the morals of millions of boys throughout our country because of the sediment of poison which it deposits in the lungs and stomach and thence into the blood and brain.

Such eminent physicians as Sir Morell Mackenzie of London, England, Dr. Hammond, Dr. Sayre and others, have described such maladies as heart disease, cancer, epilepsy and insanity as directly due to the peculiar insidious poison from cigarettes.

These are facts that no longer admit of dispute, the microscope

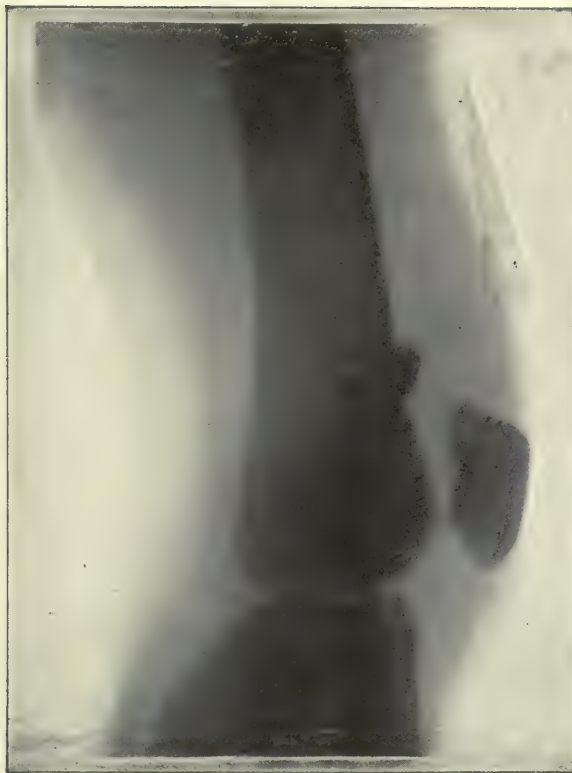


***X-RAY PHOTOGRAPH** (*Skiagraph*) of a lady's hand with a plain gold ring on the third finger. The joints and wrist-bones show clearly, while the faint, shadowy part shows the outlines of the hand as it was held for one-half minute before the camera. At upper end of third or palm joint of thumb appears a small knob of sesamoid or false bone. See page 157.

*This and the succeeding x-ray photographs were taken from life at Mr. Fuchs' x-ray laboratory in Chicago.



For this picture the patient put his leg upon a chair and exposed his foot, with the shoe on, to the *x*-ray. The above *x*-ray photograph (*skiagraph*) was the result. You can see plainly the nails in the sole of the shoe and the steel shank as well as the bones of the foot. Between the toes two or three of the shoe buttons show. A lead pencil stuck in the chair seat is also visible.



Skiagraph of the leg of Thomas Henly, who had been shot. The bullet, lying almost against the bone, is plainly visible, as is also the small knee-cap.



Skiagraph of the arm of James Quinn. It was so badly swollen when he reached the doctor that the possible break could not be located. The *x*-ray showed the surgeon exactly where the break was and enabled him to set it properly.

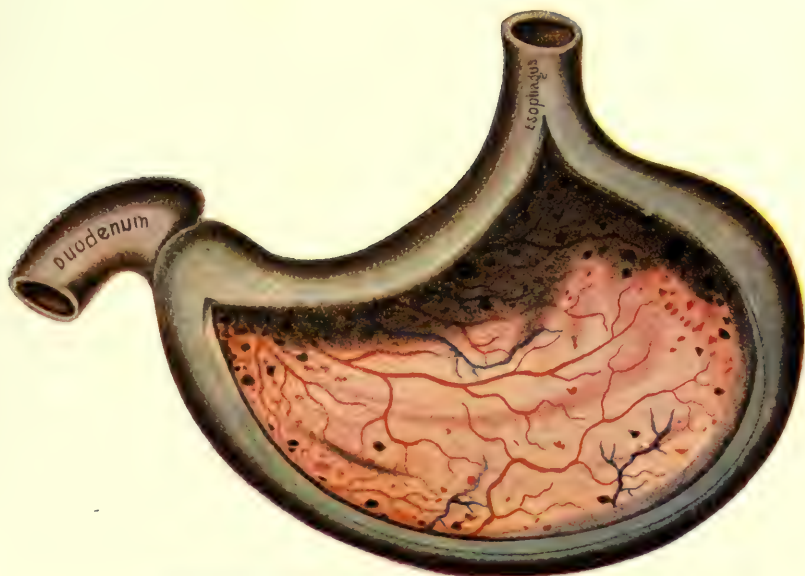


This is from an x -ray photograph of the hand of a son of a prominent physician in Chicago. The young man's hand was swollen and sore. The x -ray revealed the trouble as a growth upon the bones in the palm of the hand. Thus seen it was easily remedied.



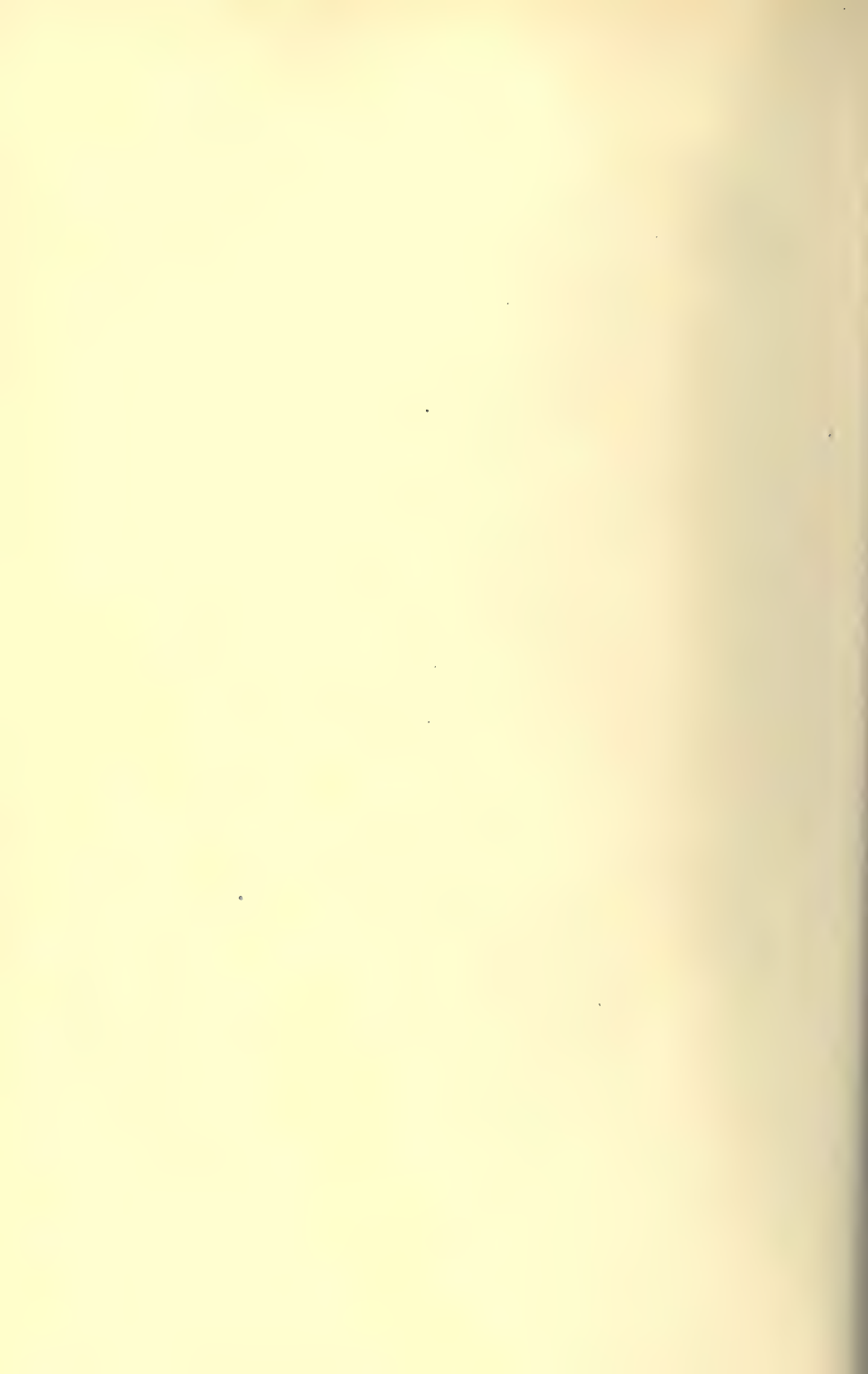


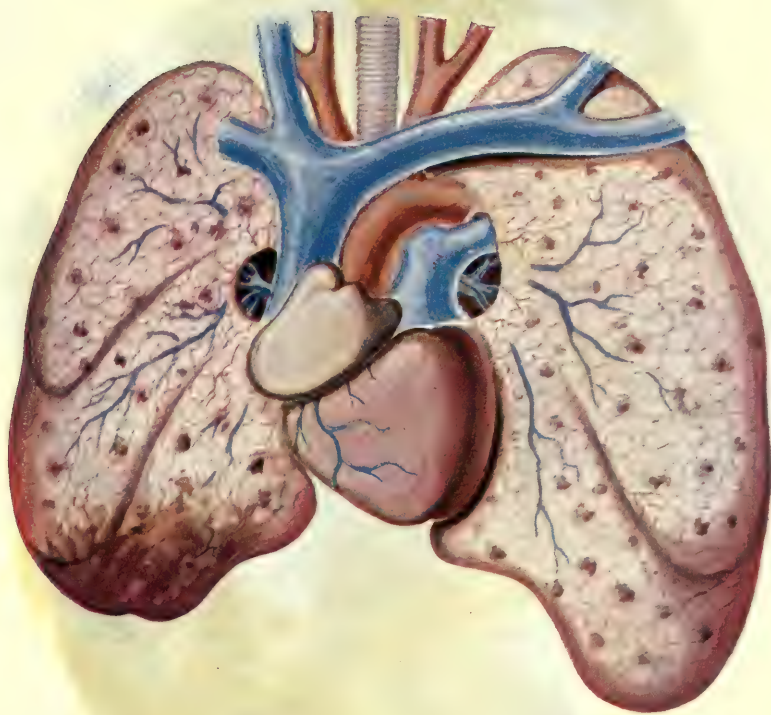
A Healthy Stomach.



Inflamed Stomach of a Cigarette Smoker.

The use of cigarettes is ruining, physically and mentally, **millions of boys.** Besides the danger of mental effects, the inflamed stomach is liable to give out before middle age. When a disease attacks a person of this kind, and it is more liable to than others, *their days are numbered.* **Every** young man should read article on pages **119. 152**





**Lungs of Andrew Harper, who Died from the Effects of
Cigarette Smoking.**

The above illustration shows the shrunk condition of one of this young man's lungs, and the nicotine sediment in them. The lung is inflamed, and the nicotine shown in the dark spots.

Everyone should read the article on page 119, and it is not likely that he will ever do any more cigarette smoking.

verifies the facts every time. Were this truth generally known no parent would allow his child to smoke a cigarette and no town would permit their sale.

HOW TO DETECT BAD WATER.

It is very important that every person should be familiar with the simple methods for determining with tolerable certainty and accuracy the character of water liable to be used for drinking and cooking purposes. The following methods are reliable:

Permanganate-of-Potash Test.—The following is the best form of this useful test, which is the most reliable of any simple method of examining water for organic impurities:

Dissolve in an ounce of water twelve grains of caustic potash and three grains of permanganate-of-potash crystals. Keep in a glass-stoppered bottle. Add a drop or two of this solution to a gill of the water to be examined, placed in a perfectly clean and clear bottle. The permanganate solution has a beautiful pink or purple color. If this is changed to brown or disappears after standing a few hours the water is impure and unfit for use. The permanganate alone is found to be unreliable, as it sometimes fails to detect the presence of some kinds of organic poisons.

The Fermentation Test.—Put some of the water to be tested in a small bottle and add a pinch of pure white sugar. Place it uncorked in a warm place. If cloudiness appears within two days the water is too impure to be used with safety. Care must be taken to have the bottle perfectly clean. The cloudiness can be most easily discovered by holding the bottle up against a dark or black ground in a good light.

MODERN BEDS, DISEASE BREEDERS.

Heavy "Comforters" Great Enemies to Health.

They should be cast aside as a relic of barbarism unworthy of use by civilized man.

"Putting children to bed properly" is so important that lack of information on this point is given by medical authors as one of the great reasons why nearly one half of our children die during childhood. To the survivors it is worth more through life than a rich legacy bequeathed by their parents.

Dr. Bronson says: "No wonder people are afflicted with so many rheumatic and neuralgic pains and with scores of maladies. As a rule they are not to be pitied, for they persistently refuse to inform themselves."

HOW TO SECURE HEALTH-PRESERVING BEDS.

One-third of your life time is spent in bed, and if that place is so conditioned as to cause sickness or disturbances in the body which will cause severe pain, rheumatic, neuralgic, etc., it is high time this were known and corrected.

The bed should be placed in a corner room or room having windows on two sides so as to secure perfect and free ventilation. The head of the bed should point to the north to secure the benefit of the magnetic currents that flow from the pole towards the equator.

The mattress should be of hair or of fresh straw, often renewed, or of excelsior. Feather mattresses are the worst. Feather covers are always dangerous, and if used should be thin and light weight. Heavy comforters are abominations and should be banished from civilized communities. All beds should be wide, the wider the better, especially if two occupy the same bed. On vacating the bed in the morning the covers should be thrown back and allowed to air for several hours, the longer the better. To make up the bed soon after it is vacated is to hold in its folds the poisonous gases that exuded from the body of the sleeper, and which are sure to contaminate the body of whoever next sleeps in that bed. Particles of putrid matter in the shape of gases have been known to lurk in such a bed for months. It need scarcely be added that strict cleanliness is absolutely necessary in order to keep the bed in a healthful condition.

PUTTING CHILDREN TO BED PROPERLY.

Foot Bath.—The first care of the mother should be to see that the child has a foot bath every night in warm weather and every second night or third night at other times. No woman who neglects this simple duty has a right to assume the rearing of a child. If the habit of the daily bath is formed from infancy it will seldom, if ever, be departed from in after life. Its value to the individual cannot be estimated in dollars and cents. Physiologists prove that it is more essential to keep the feet, especially the bottoms, clean than even the face.

Admit Pure and Expel Foul Air.—The next duty of the mother is to see that the windows are so arranged that one will admit fresh air all the time and another let out foul air. The bugbear of draught has laid the seeds of many a disease. It is a notorious fact that invalids camping out and sleeping out of doors and in the draft of a tent seldom or never take cold.

About the Covering.—Heavy bed covering should never go on a child's bed (or any one's bed). Thin single blankets or spreads, increased in number as the weather requires, are infinitely more healthful. Thick comforters are almost certain to prove too warm during the night and to be thrown or kicked off, resulting in a cold or cough.



HOW TO PUT CHILDREN TO BED PROPERLY.

How mothers can save themselves an immense amount of worry and save their children suffering throughout life, is given in this article.

or in contracting catarrh, asthma or consumption. The thick comforters, too, are more difficult to air, and often absorb and hold dangerous microbes, the result of the decomposition of what is constantly given off by the breath and the bodies of the occupants of the bed, besides, the thick comforters are too difficult to wash or be kept clean. Banish them, and forever, as you value your health and that of your children.

Night Clothes.—A mother should never allow her child to sleep in the clothing worn during the day. Separate night clothes are essential to health. Coarse woollens should not be worn next to the skin. Fine wool or canton flannel is best for most persons.

Care of the Teeth.—Every mother should wash her children's teeth with a soft cloth or soft tooth brush, and as soon as they are old enough teach them to use the brush before retiring at night and on arising in the morning. This is imperative, not only for the preservation of the teeth, but to prevent indigestion. Many a case of sour stomach and of colic is directly traceable to unclean teeth.

Important Matters to Attend To.—No mother should ever neglect visiting the child's bed room during the night to see after the covering, the ventilation, etc. Every article of clothing worn during the day should be **hung up** where it will be well aired. It is better that socks or hose be aired for 24 hours before putting on again. This may be done by using two pairs, worn alternate days. It is still better to use fresh hose each day. Under no circumstance should a child be upbraided or scolded just before going to bed at night. **The act of putting a child to bed pleasantly and kindly should be held as "sacred as holy writ."**

Dr. Payne of Chicago says: "The apparently small matter of putting children to bed properly is understood by not more than one woman in fifty. Most mothers do not consider it very important and yet it is one of the chief causes why nearly one-half of our children die during childhood."

TOILET ARTICLES.

For Preventing and Removing Wrinkles.—To prevent wrinkles apply to the face sweet almond oil once a week, and rub into the skin. To remove wrinkles apply it two or three times a week. The best time for applying it is before retiring at night.

Massaging the Face with the ends of the fingers is another excellent means for the same purpose. It stimulates the blood vessels to a greater activity, which is very important in such cases. It may be used in connection with the above treatment. By this means one can keep a smooth face until a ripe old age.

Rose Tonic for Beautifying the Face.—Add 5 cents worth of Epsom salts to 10 cents worth of rose water. If all the salts is not dissolved, add sufficient water to dissolve it. Apply to the face with the handkerchief, cotton cloth or ends of the fingers, and gently

rub the face until dry. This will whiten the skin, and is a complete substitute for the different preparations that are used for this purpose, and it also prevents the tendency to wrinkles. It is better to bathe the face in warm water before using the lotion.

For Whitening and Softening the Hands.—To one pint of cider vinegar add one ounce of saltpetre. This constitutes one of the best preparations known for the hands.

To keep the Crimp or Curls in the Hair.—Boil one-fourth ounce of Iceland moss in a quart of water, add a little rectified spirits to keep it. Perfume to suit.

Rough Skin and Hands:

Glycerine.....2 ounces.

Rose water.....4 “

Carbolic acid.....5 drops.

This is an old preparation, but an excellent one for keeping the hands and skin smooth. Apply at night.

Scotch Method for Removing Wrinkles.

Almond oil.....1 pint

Best tar.....1 tablespoonful.

Mix, and heat in a tin cup set in boiling water; stir until completely smooth. Add more oil if the compound is too thick to run smoothly. Rub this on the face on going to bed; lay pieces of soft cloth on the cheeks and forehead to keep the tar from rubbing off. The bed linen may be protected by laying old sheets over the pillows. Wash off the application in the morning with warm water and soap. Repeat until the desired effect is produced. This formula has been successfully used by hundreds. It also makes the skin smooth.

Complexion Wash.—Add grated horseradish to sweet milk. Let it stand one-half hour, then apply with a soft cloth.

Another.—Add a piece of gum-tolu, the size of a nutmeg or larger, to a small bowlful of soft water. After thirty minutes it is ready for use. A few applications will soften the skin, remove tan, and in many instances freckles. This is much more valuable to beautify the complexion than many of the costly cosmetics. Many of these that are employed for complexion purposes penetrate the pores of the skin and are very injurious.

FORMULAS OF GREAT VALUE.

The following formulas have been obtained from the very best sources, tested thoroughly and will be of inestimable value in any family.

Scotch Liquid Soap.—Those who have used this formula say that they now have a large washing all snowy white on the line before 9 A. M., that with the old soap and boiling process they could not have had out before noon, and all the trouble, cost and heat of boiling the clothes are saved. It is simply invaluable to every family.

Formula.—Salsoda.....2½ lbs.
Borax.....½ lb
Rosin.....¼ lb.
Water.....1 gal



MRS. C. L. CHASE.

Aged fifty-nine years; was a resident of Tokyo, Japan, for twenty years.

THE SECRET OF BEAUTY.—Mrs. Chase's face, at the age of fifty-nine years, was as smooth and free from wrinkles as at twenty-five. She used the simple Japanese method, as given on page 163.

By use of this remarkable discovery every lady may regain the bloom of youth.



ALMOND TREE. (*Amygdalis Communis.*)

Almond, a Preventive and Cure for Wrinkles.

The reason why Japanese women, even in advanced age, are noted for being so free from wrinkles and look so young, is because they use an almond lotion, easily obtained and inexpensive. See page 163.

Beautiful Complexions.—The women of Paris are renowned in all the world for their pretty complexions. It is because they have abandoned cosmetics, and use the almond preparation above mentioned. See page 163 for its use.

Boil the whole twenty (20) minutes. Dissolve two ounces of salt in one quart of water and add to the above. After which add two (2) ounces of liquid ammonia. Can for use.

To four gallons of water use one-half pint of the preparation. Soak the clothes over night, or at least two or three hours, before washing. Clothes are not boiled when this preparation is employed. It saves nearly one-half the labor in washing and is worth hundreds of dollars in the course of a life-time to every family.

Madam Blake's Wrinkle Pomatum.—This is the celebrated wrinkle remover that was always sold for a large price and under a positive guarantee. With this formula ladies can make, at a cost of a few cents, what would cost them several dollars to buy at the stores, and many times cannot be had at all.

Formula.—Cocoa Nut Oil..... 1 oz.
Sweet Almond..... $\frac{1}{4}$ "

Mix, apply and rub thoroughly into the skin. To prevent wrinkles, apply an ounce a week. To remove, apply two or three times a week, and rub upward.

For persons who have an oily skin, add ten drops of the tincture of benzoine to the above, before using. (Be careful not to mistake this for benzine.)

This Carpet Cleaning Formula is worth its weight in gold many times over. It saves labor, expense and the carpet.

Formula.—Soapine or Ivorine..... 1 teaspoonful.
Ivory Soap..... 1 bar.
Water 1 gallon.

Shave the soap fine, then boil the whole until dissolved. Let stand until cool. Brush into the carpet with an ordinary scrub brush until a good lather is formed on the carpet. To take this off the carpet, use a piece of galvanized iron, about No. 10, four inches wide by ten long; concave it to a one-fourth circle. Round the corners of the lower part of it. After the lather and dirt have been taken off with this instrument, follow it instantly with a sponge and cold water. It will then look like a newly laid carpet. This preparation will clean all carpet that has warp in it. The cost of the material for this preparation, for a floor twelve by fifteen feet, is about 18 cents.

Imperial Hair Restorer.—This valuable formula, which was for many years the private secret possession of the imperial family of Germany, has put a fine growth of hair on many a bald pate.

Formula.—Burn sole leather (the soles of cast-off shoes) to a crisp, pulverize and mix with a small quantity of fresh lard, then apply at night to the parts lavishly, rubbing it into the scalp thoroughly. On retiring, tie up the head carefully to avoid soiling the bed clothing. Repeat every night for eight or ten days.

TO MAKE THE HANDS SMOOTH AND WHITE.

Formula.—To half a pint of cider vinegar add one ounce of saltpetre. This makes the best lotion in the world for making the hands smooth and white. It is also unexcelled for chapped hands.

HOW TO SELECT A MATRIMONIAL PARTNER.

Perhaps no more important question can be raised by man or woman, who has arrived at a suitable age to enter upon the rights, duties, and responsibilities of married life, than the above.

To whom shall the young man or young lady apply for advice and counsel on this all important theme? They have some conception of the importance of the step; they recognize that to found a home, to transmit to posterity an image of themselves, to rear a brood of children and, so far as may be, to mould their characters and destinies for good, is a work of the highest significance, and who shall share with them this relationship and function is the question of questions.

Parental Advice.—It would seem only natural that the young should look to their parents for help and guidance in the matter, and what help parents can give is no doubt cheerfully given; but its value must depend upon the knowledge possessed by parents, and upon their ability to give disinterested advice. They have seen more of life and studied people more than their children.

The views herein presented on the subject of marriage vary from those commonly held, but, notwithstanding, they will be found invaluable both to parents and children.

There is such a faith in the overruling Providence of God as shall guide in answer to prayer in this matter, as in all others of human life, that will be adopted by many as the only safe protection against error.

Such persons deem their ignorance on all the many ramifications of the question a sufficient reason for passivity

and say that, as a good wife or a good husband is the best gift that God can bestow, they will carefully watch the indications of His guidance and distrust their own judgment in favor of one bearing the tokens of being one sent from God.

Intuition.—There are others who, having simply determined that the one on whom they will bestow themselves shall be of suitable age, social standing, education and health, wait for that *intuition* that shall dawn upon them when, in the presence of the affinity. They must feel, as a friend once said, “that jump of the heart” that was to him nature’s infallible guide.

We shall not ridicule or quarrel with any opinions honestly entertained upon the subject, but will call attention to the fact that there is claimed for phrenology, joined with physiognomy, advantages possessed by no other theory bearing on this interesting question.

The Theory of Phrenology.—The theory underlying phrenology is that the real spiritual personalty, in clothing itself with a material covering for its temporal sojourn in this material world, has stamped its quality upon the body generally, and upon the covering of the brain specifically; that the appearance in general, and in particular of the head of man, gives an unerring guide to the inherent nature of the individual.

It claims, by long continued observation, to have acquired such a knowledge of these cranial protuberances and depressions as to grade them with exactness as to their location and degree or size, so that they may be read with accuracy by one schooled in the study.

If we need any apology for here introducing what phrenology has to say on the question, it is that nowhere else do we find any coherent teaching bearing upon it, and that, so far as we have examined the subject, phrenology has some strong points in its favor.

The first to which we will call attention is this, it prescribes emphatically the rule that *selection* should precede courtship.

Selection presupposes a knowledge of the quality or qualities of the article selected. It necessitates an acquaintance also with the theory that shall correctly indicate the presence of desirable as well as undesirable qualities; in short, it presupposes a knowledge of the philosophy of human nature.

Selection to Precede Courtship.—In teaching that selection should precede courtship we are led to infer that the intellect has a paramount part in this work—the sentiments are to be subordinated until such time as they receive permission to enter the field.

Certainly if human reason is ever to be enlisted in its duty pertaining to the welfare and happiness of man, this occasion of selecting a life companion and joint parent of offspring is a suitable and becoming one for its exercise.

We would not employ a servant, a book-keeper, a confidential secretary, without thorough inquiry into his or her fitness for the position. We would not buy an estate without all our inquiries were first satisfactorily answered by persons competent to give the information, and we never give offense in asking for a full declaration of all facts having a bearing on the value of personal services or real estate, that we may form an intelligent estimate of its value to us.

Now, phrenology claims its ability to give an impartial and correct inventory of all one's mental, moral and physical predispositions.

If, under the guidance of his reason (not inclination), a man candidly acquaints a lady that he contemplates marriage when he can select a lady of suitable qualifications, that his acquaintance with her has given him a pleasant impression of her fitness, but that no proper judgment can be formed on a slight or superficial acquaintance, and that, inasmuch as a mistake would be as prejudicial to her happiness as to his own, he will esteem it a favor to be furnished with a full delineation of her natural qualifications, offering

the same information concerning himself—could any intelligent woman rationally refuse?

— *What! give him a phrenological chart of her brain?* Yes! precisely that; and he giving her one of his; that is what we mean—let us face the exact proposition. If it be an improper request for him to make and for her to entertain, will you please say why?

Why? because it is not customary; *that is true*, but is it not all within the limits of honor, candor, sincerity and propriety, if both parties believe that such charts or delineations are useful in imparting correct indications of natural tendencies?

If neither place confidence in phrenology they will not give consideration to the matter; but what we call attention to is this: Whether phrenology be a science or not, it proposes, in this matter of selecting partners, a course which, compared with the ordinary methods, commands our unqualified respect; it recognizes at the outset the absolute need of correct data, it proposes to give the lady as full information as it asks of her, it recognizes the transcendent importance of the marriage relation, it steps out into the light, makes no pretence, and accepts on the honor of a gentleman as strictly confidential that which it asks the lady to receive in the same spirit.

No language can be too strong to condemn the carelessness, the duplicity and the ignorance with which the relation of marriage is too often assumed; and we ask our critics to tell of a better or as good a method as has herein been described.

What has Phrenology to Offer.—Let us consider what phrenology has to offer on the choice of marriage partners.

To found a family is a great affair; of all that man is permitted to accomplish this stands first and highest. To own broad acres is something, to build a great name in business or in civil office is something; but how poor is a

childless millionaire compared with those who own healthy children.

He who "owns" a good wife, she who "possesses" a good husband, and that married pair who have a *clear title* to smart and rosy little ones, with a domicile and necessary appurtenances, belong to nature's nobility.

To establish a family which shall float along down the stream of time, to originate human interests and help create its natural history, are among the noblest of powers. What realm equals the family kingdom? What Governor-General is as absolute as its sovereign head, or what obedience as willing or complete as that accorded by love?

How wise the Spartans that permitted no man to sit in the councils of the State who had not first qualified himself by becoming the father of a family and thus ruling in a minature state before he essayed the role of governor on the larger platform.

Institution of the Family.—It is easy to recognize the family as a divine order or arrangement—all history bears witness to its beneficence. It must then be under law; there must be lawful or orderly methods characteristic of its development and establishment.

He who ordained the family, ordained the laws by which it should be begun and continued, and it becomes the interest of every man who proposes to found a family to learn *how*.

If you desire a happy family, ascertain and obey these laws, for the breach of them is the cause of all unhappiness.

Selection Before Love-making is the rule we have already commended. Two should no more make love till they have selected, been accepted and are engaged, than enter a house till they have closed the bargain for it and obtained its keys. Is it not strange that a distinction so obvious should have received so little public attention; reduce it to practice and we shall have few "broken hearts" and less sensuality.

A young man, before paying his addresses to a young woman, should ask at the innermost shrine of his being: "Will this one, or that, make me the best wife?" and let the "light within" first illumine this question. He should next consult his mother; then whoever else he pleases.

He should next make advances to the girl herself, and by letter, rather than a personal interview; not as a lover, but only mutually to canvass their respective matrimonial qualifications and adaptations.

It next remains for her to consider and answer, not whether she will accept his love or become his wife, but only whether she will receive him as her suitor, to consider their mutual fitness.

Parents to be Consulted.—Of course he should now consult her parents. If she accepts, their next step is to ask the consent of the father and mother. This fully opens up the whole subject to a frank, intellectual discussion between all the parties interested; asking the parents leave being tantamount to asking that of all concerned.

If any object that this course exposes a sensitive young man to the disadvantages of a negative, pray what course does not? It is not possible to keep this matter a secret.

If he can marry the one of his choice and still retain the respect and affection of her parents, merely by saying, "May it please you," had he not better ask?

Is it not an impertinence to such to carry her off, heart and hand, regardless of the parental wishes?

Frankness is always commendable. The straightforward course is always the best calculated to ensure success.

In accepting his addresses, her parents should frankly state their objections, if they have any, and also tell him, as far as they deem best, her main characteristics, excellencies, defects and their opinion of their fitness; and whatever in their best judgment has a bearing on the question; but all such confidences should be deemed by all parties as sacred.

But after all conferences, the parties **themselves** are the **only** rightful arbiters.

Let no human being marry or refuse marriage against their own will.

Having introduced our young people to each other, let us leave them prepared in the best possible manner to make each other's acquaintance.

General Requisites.—There are conditions to happy marriages too well known to demand explanation or discussion here, to which we will allude in the briefest possible manner. Vigorous health, freedom from hereditary taint, moral stamina, self-respect, industrial and useful disposition, genuine benevolence or kindness, personal habits of cleanliness, order, temperance and conscientiousness.

We must not expect perfection, but look for the highest aggregate combination of these qualities, which all of us associate with a lovable character.

Likeness to Each Other a General Rule.—The parties to a happy marriage must be substantially alike. By a fixed law of mind, like loves like, and affiliates with it; but dislikes unlike and fails to intermingle therewith.

Similarity is the great bond of association. Not only do philosophers fraternize with philosophers, poets with poets, etc.; but individual men and women choose for intimate friends those as nearly like themselves in taste, doctrines, habits, likes, etc., as is possible.

Are not those whom friendship's sacred ties bind together, drawn to each other by like traits? They love each other because each likes the same things. Christians love Christians, but dislike atheists, while votaries of any science love students of the same science best.

1. We like whatever renders us happy, because thereof and in proportion thereto; but hate whatever renders us miserable, because of this misery and in proportion to it. Indeed, by this involuntary shrinking from pain and love of enjoyment, nature drives us from disobedience and attracts us to obedience of her laws; and has therefore rendered it

both necessary in itself, and a universal concomitant of sensation.

2. We are rendered happy by the normal and miserable by the abnormal action of our faculties, and the more so the stronger they are. This is a first law and condition of all happiness and misery, and it is clearly established by phrenology.

3. Similar and normal faculties awaken each other agreeably, but dissimilar and abnormal ones disagreeably.

Thus large ideality or taste delights large, and is delighted by it, but disgusted by small, and thus of each and all the other faculties.

Illustration of Adaptability.—To give an illustration of this proposition and apply all three principles to love: Mr. A., having large ideality, and therefore delighted with the beautiful, but disgusted with the coarse and slatternly, marries Miss B., who has ideality also large, and is therefore continually feasting his taste with new manifestations of beauty and perfection in manners, expression and sentiment, besides pointing out to his admiring tastes a constant succession of fresh beauties in nature, poetry and character, thus perpetually increasing his happiness by inciting this large faculty; his large ideality meanwhile is constantly delighting hers, so that their being alike in this respect is a constant source of happiness and therefore means of love of both; whereas if he marries one whose deficient taste is constantly tormenting his refinement, while she suffers constant reproof from his large ideality, their dissimilarity becomes a source of perpetual suffering to both. The practical difference between marrying one who is similar and dissimilar is heaven wide.

Another Illustration of Adaptation.—A pious woman, whose large veneration gives her exquisite pleasure in divine worship, marries one who takes equal pleasure in the same worship, both enjoying all the more pleasure in each other because they love to worship the same God.

Her veneration re-awakens his, which makes him happy in her and therefore love her; while his, by re-awakening hers, continually renders her happy in him and therefore increases her love for him; whereas, if he is an atheist this difference abrids and pains her veneration, makes her unhappy in him, and compels her to dislike him, while his, regarding her piety as superstition, detracts from his happiness in and therefore love for her, and this religious discord impairs their union in other respects, as for instance, in the education of their children it becomes a constant cause of anxiety on the one hand and irritation on the other.

If one, having large conscientiousness, scrupulously loves the right and hates the wrong, while the other, having small conscientiousness, cares little for either, how can they live as happily and lovingly together as if both were scrupulous or unscrupulous?

Can he whose large order is delighted by method and pained by disorder, be as happy in or loving with her whose small order is perpetually leaving everything in complete confusion, as if both liked order or both cared little for it? Is not similarity, even in the wrong, more promotive of conjugal concord, than if one is right and the other wrong, or either condemns what the other likes. *Do you love the more you differ, or the less so?* Are you unhappy because alike, or unlike? Do not opposite views always, and necessarily, engender alienations?

Doubly is this true of the social affections. As well wed summer to winter, or ice to fire, as those who are passionate to those who are passionless; or those who love to caress and be caressed, to those who are distant and reserved, or one gushing and glowing to one who is stoical. Unite, they never can.

An apparently contradictory theory to that herein set forth may be entertained, and many illustrations of happy unions between strongly contrasting dispositions may be cited. We will therefore proceed to consider.

Exceptions to the Rule of Like Marrying Like.

—Man alone of all animals is endowed with freedom. This involves the privilege or permission to violate law as well as obey it. The lower animals as a rule obey the law of their being, and the departure from the normal type is rare, it is exceptional—it is more uniformly the case that like chooses like among the lower animals than with men.

Nature has her inside and outside circles. Irregularities must occur, especially with the human race, or else its freedom must be taken away, and *that* with its *rationality* is what makes it what it is.

What Makes Man a Man.—A man is a man because of his possessing rationality and freedom. Under the guidance of these distinguishing characters, man is capable of attaining the highest possible conditions of the finite; he is also capable of descending below the brutes. Now, in this wide range of capacities, while the larger and more general rule teaches that like should mate with like, there is provision made for the departures from this rule to preserve the equilibrium of the race, and this is effected by union in marriage of extremes or opposites. Let us illustrate: There is an average or normal height or size in a given race, but, by a gradual operation of disturbing causes, we find instances of extreme variation from that standard, and on one hand are tall and slim specimens, on the other short and puny. Shall the general rule of like mating with like prevail here, and these tall and slender ones continue to intermarry? Nature protests and implants a taste or instinct which induces the very tall to unite with the very short, and *vice versa*, and thus the equilibrium is restored. If the small woman has a special admiration it is for a tall man, and if a tall man dislikes one thing more than another it is a tall woman.

There is in this rule no conflict with the larger one that like should marry like.

It is often observable that a strong, robust, coarse, shaggy, red-faced, powerful man is drawn to the most

exquisitely susceptible, fine-grained, delicate and pure minded woman. One would think her delicacy would revolt at his coarseness, and his strength despise her exquisiteness.

What draws them together?

By presupposition her delicate organism has about exhausted her sparse fund of vitality. She is perishing for want of this first requisite of life and naturally gravitates to one possessed of a superabundance, so that she literally lives on his surplus animal magnetism—he being all the better for the draft—while she pays him back by refining and elevating him ; and their children inherit, with his powerful animal organization, her exquisite refinement, and are far better specimens of humanity than if their parents had married similars rather than opposites.

Nature will not rest content when great inequality occurs in the manifestation of life and strives to bring back to equilibrium whatever is seriously disproportionate, both by inheritance and by subsequently strengthening the weakest organs the most.

If one who is constitutionally so very excitable that his surplus excitement renders him unhappy, marries one whose equal excitability perpetually re-increases his own, and thereby constantly renders him still more unhappy, she makes him dislike her, while his excitability, by perpetually re-increasing hers, also re-increases her unhappiness, and therefore engenders mutual hatred, besides transmitting this double excitability to their children, which thereby predisposes them to precocity ; whereas, instead, by marrying one whose natural calmness quiets his painful excitability and soothes instead of irritates him, her calmness would render him happy in her, while his excitability, by quickening her tameness, would render her happier in him than in one equally composed, besides striking the balance in their offspring, thereby also obviating the faults of both parents in future generations which marrying similars would aggravate.

By a right application of this law, those predisposed to insanity may even improve their children by this parental taint.

If a man predisposed to consumption should marry a woman having extra good lungs, she will both supply him with needed vitality, and also transmit good lungs to their mutual children, who will inherit from him that mentality which accompanies consumptive proclivities, superadded to her abundant vitality, and thereby not only escape all consumptive tendencies, but become actually improved in consequence of the presence of this consumptive taint.

By a judicious application of this law, all other hereditary ailments can be both obviated and even replaced with excellent characteristics. All required is that where either is weakly or unsound in any particular respect, the other should be sound and vigorous in this same respect. Like weaknesses in the other must by all means be scrupulously avoided.

Comb, in recommending those with hereditary predispositions to disease not to marry, is therefore wrong. All such may marry provided they unite with those oppositely constituted. Though actuated by the best of motives, yet their partial views have prevented not only themselves but many others from enjoying the domestic relations, who otherwise might have been both happy in marriage and the happy parents of healthy and highly endowed children.

Since few have well balanced minds or bodies, most require to marry their opposites in one or more respects. Almost all have too much brain for body, or body for brain, or else too much or too little respiration, or digestion, or circulation or muscle for their other physical functions. Phrenology shows the necessity of this balance, how to promote it by cultivation, and also how to transmit it.

What Forms Should and Should Not Marry.—

Those who are medium in complexion, stature, etc., who are neither extra dark or light, large or small, tall or short,

lean or fat, may marry those who are medium or nearly like themselves in these respects, or in either extreme.

Thus those whose hair is neither dark nor light, may marry those having hair a shade darker or lighter than themselves, or even a good deal darker or lighter or even jet black or bright red, as they may fancy, or as other circumstances may favor most, the complexion being not specially material, yet the darker one is, the lighter his or her companion should be.

Bright red hair should marry jet black, and jet black, auburn or bright red, and the more red-faced and bearded or impulsive the man, the more calm, cool, and quiet the wife should be. The florid should not marry the florid, but those who are as dark in proportion as they themselves are light.

Red whiskered men should marry brunettes, but not blondes, the color of the whiskers being more determinate of the temperament than the hair.

The color of the eyes is still more important. Gray eyes must marry some other, almost any other-color than gray, and so of blue, dark, hazel, etc.

Very fleshy persons should not marry those equally fleshy, but choose those more spare and slim. A spare man is much better adapted to a fleshy woman than a round favored man. Two who are short, thick-set and stocky should not unite in marriage, but should choose those differently constituted.

Those who have little hair or beard by nature should marry those whose hair is naturally abundant. Still those who once had abundance, and have lost it, may marry those who are either bald or have little; for in this, as in all other cases, far more depends on what one was by nature than on present conditions.

Those who are bony, only moderately fleshy, quite prominent featured, Roman-nosed and muscular should not marry those similarly formed, but those either sanguine or nervous, or a compound of both; for being more strong

than susceptible or emotional, they require that their own emotions should be perpetually prompted by an emotional companion and that their children also be endowed with the emotional from the other parent. That is those who are cool should marry those who are impulsive or susceptible.

Hence, little nervous men should not marry either little nervous or sanguine women, lest they and their children have quite too much of the hot-headed and impulsive and die suddenly. Generally, ladies who are small are more eagerly sought for than the large. Of course this general fact has its exceptions.

Two very beautiful persons rarely do or should marry, nor two who are very homely. The fact is a little singular that very handsome women, who of course can have their pick, rarely marry good looking men; because that exquisiteness in which beauty originates, more naturally unites with that strength which accompanies large noses and irregular features.

Those who move, speak, laugh, etc., rapidly, should marry those who are calm and deliberate, and the impulsive those who are stoical; while those who are medium, may marry those who are either or neither, as they may prefer.

A woman who inherits her looks, stature, appearance, and physique mainly from her father, should give preference to a man who takes most after his mother, physically; whilst women cast strongly after their mothers should marry those men in whom the masculine form and physiognomy superabound.

Noses indicate character by indicating the organisms and temperaments. Accordingly, those noses especially marked should marry those having opposite characteristics. Roman noses are adapted to those which turn up, and pug noses to those turning down; while straight noses may marry either.

Narrowness at the nostrils indicates small lungs. Such are, of course, adapted to those with broad nostrils, which accompany large lungs and vital organs.

Those whose faces are long, slim, and thin, should marry those having short, broad, round, full-moon faces. The physiognomical sign of a consumptive taint is thinness from the lower part of the eyes, as you pass straight down; that is, where the hectic flush of those in consumption appears; and such should marry those full there, who, when they laugh, show a large muscle, starting at the middle of each side of the nose, and running obliquely towards the ears.

Heavy lower jaws, which signifies animal vigor, are adapted to light; but two with heavy ones would create offspring tending too strongly to the animal, and two who have too light ones, those too feeble physically to become, accomplish, or enjoy much.

Large mouths and lips signify hearty sexualities. Females having small mouths are poorly adapted to large featured, bony, broad-built, robust men.

Nor should two with narrow, retreating chins marry; but such should be paired off with those which are broad, prominent, and projecting downward.

A straight up and down profile is adapted to one which resembles the new moon, with the nose projecting, but the forehead and chin retiring.

It is not well for two having very fine, soft hair and skin to marry, lest their offspring be too exquisitely organized for their strength; nor should two very coarse haired, lest their children prove too coarse and animal; yet those whose hair and skin are average, may marry fine, or coarse, or medium.

Those whose hair curls naturally should not marry curls—unless they can be easily taken off—but should select those whose hair lies so close and smooth as to fairly shine, while wavy hair is adapted to either or neither.

These cases are instanced, among thousands of like ones, less on their own account, than as illustrations of the law involved, which, once understood, becomes a guide in all other cases.

Still, one should not be rejected because of some *minor* conditions, provided the great *outline* characteristics are all right.

What Mental Traits Harmonize and Antagonize.—Since the *mind* constitutes the man, nature must make especial provision for its transmission; hence, however important a right physical adaptation, a right mental assimilation is far more so. Gender, too, inheres mainly in the mind. Then what laws govern mental affiliations?

Precisely those which govern physical. In their great outline they must be substantially alike. Thus, a savage and a civilized do not harmonize as well as two who are savage, or two who are civilized. No instances of genuine affection obtain among all the marriages of white men with squaws, or African, or Malay woman, except where the latter have been first civilized. Could a bigoted heathen love a bigoted Christian? The more they set by their religion, the less they would set by each other. Not only should a Chinese marry a Chinese, a Turk a Turk, and a Christian a Christian, but those of the same Christian faith should marry those of like tenets. Catholics, as such, naturally blend with Catholics, and Protestants never with those of opposite faith. That instance cannot be cited in which an extreme Catholic lives happily with an extreme Protestant. Let all Catholics, all Protestants, attest whether they are not instinctively drawn, other things the same, to those of their own faith, but repelled from those who differ from them. Each must attend their own church, which initiates a religious divorce, and this breeds separation on all other points, besides each persisting that their children shall be educated in their own faith, but not in that of the other.

DEGENERATES.

The man who has what is often termed a "bad eye" or a crafty expression should be shunned, as he will surely lead any woman who marries him a miserable life. Sometimes these eyes are fierce, often restless, while the eyebrows have a tendency to lower. Notice them when their possessor meets strangers or people he does not like, and the evil spirit back of the eye will be apparent, although otherwise well hidden. Then, too, we hear much said nowadays about degenerates, not because people have changed, but simply because some scientific students have gathered the actual facts about the number of people who have been deteriorating and have given the proofs to the world.

Anybody looking at the young ladies in any of our large cities cannot help noting how the very slim, narrow-hipped, and narrow-shouldered girls and young women predominate. This is attributed by the scientists to the very general habit of wearing tight clothing and of tight lacing that prevailed among their mothers a generation ago. These pretty, trim, vivacious, nervous, sexually undeveloped young women make the poorest kind of wives and still worse mothers. They are degenerates suffering for the sins of their ancestors. If they will read page 113 they will discover wherein they are persisting in the habits that will continue the degeneracy inherited from their mothers. Young men would do better and be happier to remain bachelors than to marry such girls.

DEFECTS OF MEN—In any city or town one has not far to go to find young men with a more or less slouchy gait, low forehead, chin narrow, jaw widening rapidly until it becomes prominent under the ear, eyes near together, and generally restless, receding forehead and chin, back of head almost in line with the back of the neck, etc. Such a man, even though of pleasing address, will prove to be cruel, selfish, heartless, liable to fail in business or commit some crime,—if a workman, likely to engage in strikes and frequently out of work. They are degenerates in whom the natural mental qualities are illy developed and who are sadly deficient in that most important of all qualities, self-control. They are like an engine without a safety-valve or balance wheel. They may run all right for a time, but trouble is sure to come before long. So it is with the degenerate. He may make a fairly good appearance for a time, but it is not in him to do well. He, too, will cause trouble. To a careful observer, the signs of degeneracy are always apparent, and such persons should be shunned for companions and especially avoided when matrimony is the end of the companionship.

True, not many will show *all* the signs of degeneracy noted in a very marked degree, but some will show marked deficiency in some one feature and slighter ones in others. Some will show slight deficiency in nearly all, though marked in none. But all alike are unfitted for parenthood. It is not their fault, but their misfortune, and society must come to the point where it shall protect itself from the perpetuation of such blemishes of character before it can hope to make real progress and secure a preponderance of noble, capable citizens.



NEVER MARRY A MAN OF THIS TYPE.

The woman who marries a man with a physiognomy similar to the above, the weak points in whose character are further described on page 184, is likely to have a life full of trouble and to rest in a premature grave.

Mothers, caution your daughters.



**TYPE OF WOMEN MEN SHOULD SHUN WHEN
CHOOSING A LIFE COMPANION.**

See description on page 189 for the type of woman who marries for support, and who is what may be called, sexually, a "man hater." Before seriously considering marriage carefully read pages 74 and 189. It may save a life of sorrow and sadness.



**TYPE OF A WOMAN A MAN MAY SAFELY
MARRY.**

**The above Form and Face Indicative of a Suitable
Companion.**

How many a young man might have been saved a life of unhappiness and misery if the mother or sister had only "whispered in his ear" something like the sentence given on page 861.

"A MAN HATER" SEXUALLY.

It is in the nature of things that man should desire to "multiply and replenish the earth." With some women and with many men the chief object and aim in marriage is to bring into the world healthy, intelligent and robust children to illumine their early and cheer their declining days.

With all who seek the married state the expectation is that it shall result in a prolonged intimacy with the chosen one and in securing a home—a peaceful, happy home. Is it not then of the utmost importance that steps should be taken, intelligently, to so choose as to gain the ends desired? And is it not the height of folly to go blindly into this, by far the most important relation of his lifetime?

If a man is full-blooded, sexually vigorous and strong, do you suppose that he could reasonably expect satisfaction if he married a girl like the one illustrated as "A Man Hater Sexually"? A woman whose sexual development was arrested in early youth—who has not enough sexual passion to last her through two years of wedlock? Assuredly not. (See page 113.) Such women usually have flat chests, narrow hips, bloodless and thin or peaked features, indicative of arrested sexual development and a lack of that warmth and softness that attracts and holds the affections of men. Some women marry because they want a man to support them. They will have a horror of bearing children or rearing a family. Sexually they are man haters. Let them alone, young man, unless you likewise are indifferent to such things.

HOW TO FIND HAPPINESS IN CONJUGAL RELATIONS.

When mother or sister perceive, as they are apt to do, that the son or brother designs to "get married" to or is "keeping company" with some member of the other sex whom they have reason to believe would be altogether unsuitable as a life companion, it is of the most vital importance that promptly and tactfully some word of warning be given to that son or brother before it is too late—before the final step is taken that is to result, and so often does result, in a life of misery and sometimes of sin or of crime. The young man, as a rule, is blind to the facts, attracted by some fancy or some alluring trait; he cannot distinguish its evanescent quality or note that this attraction of feature or mind, as it may happen to be, will not stand the test of intimacy or of time.

If, then, other and sterling qualities are lacking in the woman of his choice love soon fades to discontent, then to apathy, and then to disgust and loathing. Hence the importance of "whispering in his ear" the timely word that as he values his future happiness or would avoid a life of misery and wretchedness he must stop. Many may not listen to the timely warning but more will, and thousands of affectionate sisters and often mothers have thus saved a much-loved brother or son from that "hell on earth"—an unhappy, mismatched married existence.

WHOM TO MARRY OR NOT TO MARRY.

One of the greatest causes of unhappiness, nay, misery, in the world, is the steady adherence to the superstition that two young people who feel, when in each other's company, the sexual excitement that is so often mistaken for love, must marry. It is folly for which thousands upon thousands are constantly paying a most fearful price. Love! Why, love means self sacrifice. It means wisdom. Many a man for love has remained a bachelor all his life.

Nature has decreed that certain dispositions will antagonize certain other dispositions. Marriage is often so hasty that these faulty dispositions are not discovered until after marriage, when it is too late to retreat, no matter how much it may be desired.

The following simple rules should be carefully studied and kept in mind.

1st. Two people of similar complexion and temperament should never marry. If they do it will prove a failure.

2nd. Two tall, slim people or two short, heavy-set people should not marry.

3rd. A nervous, fidgety person should never marry another nervous person.

4th. A man should never marry a woman who is given to finding fault, or who is peevish and "cranky," or who scolds her little brothers and sisters.

5th. A woman should never marry a man who is naturally inclined to be arrogant and cruel, or who is inordinately selfish.

6th. A man should never marry a woman who is so proud that she keeps her parents poor dressing and providing for her. Beauty never atones for pride.

7th. A man should never marry a woman who is "touchy" or fickle in her friendship, or often at "outs" with her parents. Depend upon it these characteristics are due to a serious fault in her nature which, after marriage, will reappear in her own home to make it miserable.

CHARACTERISTICS THAT ARE FATAL TO FUTURE HAPPINESS.

Some young men act very foolish in choosing a companion for life. They are apt to mistake a physical passion for love, and marry a girl who can never be a mate, because nature has decreed otherwise. Some think they fall in love with hair, or with eyes, or with dimples, or with a pretty figure. Temperament cuts a vastly greater figure than face. A pretty face with peevish or selfish temper is like a fair-skinned apple that is wormy or rotten within.

Don't marry a girl whose chief aim in life is dress; who hangs around dry goods or millinery stores like butterflies around a gorgeous flower.

To dress extravagantly is a blot upon any woman's character. When the activity of the mind is taken up with finery the soul grows pinched and lean, the mind fails to develop, and such a woman cannot make a decent partner for any sensible man.

So, too, should no girl think of accepting any young man for a lover

who is addicted to the use of liquor, or who spends his money in speculation or in fast living. Shun such as you would an idiot or a fool. They will invariably prove worthless husbands, and to think that you can reform them is so much like playing with fire that we must quote old man Weller's advice to his son:

"Samivel—don't."

As it is to-day, in five homes out of six, domestic infelicity exists merely because before marriage these fundamental points or elements necessary to continued affection and happiness were disregarded.

LOOK BEFORE YOU LEAP INTO THE SEA OF MATRIMONY.

To select the characteristics that cause future trouble, while courting one need only watch with some care how his intended treats her family and friends. If she is cross to the dog, and the cat is afraid of her, have a care; some day you may find yourself leading a dog's life. Observe her conduct when she does not know you are observing her, and judge her by the characteristics you thus discover.

To live as happily and continue as affectionate after marriage as before is worth a little sacrifice, and it requires but very little sacrifice if you go about it the right way. First, of course, you must continue true to one another, but the secret will generally be found in one of two things. The most important of these is the keeping alive and at its best the sexual desires. This is the highest part of your nature and should be held sacred. Constant or uninterrupted indulgence is sure to destroy its enjoyment and destroy happiness for both.

The animals enforce periods of abstinence by instinct. Man has sense instead of instinct, and if he fails to use his intelligence he suffers. It is absolutely necessary, if you retain affection, to separate indulgence with long periods of abstinence. It is on this rock that more domestic happiness is ruined than on any other. And while it may seem at first to be a sacrifice you will soon learn that it is instead a means of adding exquisite pleasure to both your lives that you were formerly strangers to.

LITTLE ACTS THAT WAKEN THE SMOULDERING FLAMES OF LOVE.

Another important secret is in retaining all along the trifling acts of tenderness. Young man, squeeze your wife's hand now and then after marriage just as you did while courting, and look your wife in the eye as you did then. And wife, pet your husband now and then; think to do it. These may be trifles which many married folks will pooh-pooh as beneath their dignity, but we have always found that such people missed domestic happiness while the others retained it. Put away that selfish unhappiness and begin to attend to these little acts of affection, and if you continue it honestly for a little while you will be wonderfully surprised at the prompt response. It will repay a thousand fold for the effort.

HOW TO MAKE DOMESTIC HAPPINESS CONTINUOUS.

The glamour of youth pictures for love an eternal paradise of happiness in the association of the two who love each other. True, thus it should be, and in many instances it is so. In the majority of families, however, domestic happiness all too soon disappears. It is therefore of the utmost importance for the youthful couple that the rules which govern harmony be understood and lived up to.

WHEN PASSION SHOULD BE CURBED.

A man must not let his passion become selfish, and demand what a woman cannot and should not give. The man must bear in mind that while he is always passionate a woman's constitution differs and can properly meet him only periodically. For a man to demand more, or not to respect at all times the wife's nature in this respect, is to cause her to feel loathing toward him in spite of herself. The wife, on the other hand, should also recognize the reasonable need of her husband's natural desires, and while restraining indulgence with proper periods of rest, which vary according to conditions, from two weeks to two months, or longer, should not be niggardly. During pregnancy, with the possible exception of the last month, no true man will ever think of such indulgence. Mutual respect and affection are often sacrificed at this time by the husband's unreasonable demands.

WHEN SEPARATE APARTMENTS ARE NECESSARY.

A terrible strain upon the continued attraction of one for the other is the constant occupation of the same apartments. Few indeed can stand this. Young man, if you want your wife to be as attractive in your sight and as loving toward you all the time after marriage as before, see to it that you occupy separate apartments most of the time. It always pays richly for all that it costs in the way of temporary sacrifice.

Mutual forbearance with the special peculiarities of temper or preference is essential. The greatest obstacle to harmony is selfishness. If one will only think first of the happiness of the other under all circumstances, he will get more, enjoy more and live more than he ever can by trying to enforce his own way.

MONEY MATTERS A SOURCE OF UNHAPPINESS.

Money matters are the source of much discord and grief to both husband and wife. Man and wife are partners and are entitled to one-half of the common fund and no more. There is no sense in the woman begging for a little money from her husband, emphasizing thus her dependence upon his pleasure. While she is bearing children she is entitled to good pay for her services. Otherwise she should be independent of the man's liberality or stinginess, as the case may be, and earn her own money to spend for her own uses. There are a hundred ways in which she can do this, and the sense of independence that follows repays her for whatever social sacrifice it may entail.

DRESS A SOURCE OF HAPPINESS OR UNHAPPINESS.

Many otherwise happy families have been broken up through the wife's thoughtless extravagance in the matter of dress. In thousands of families, comparatively poor, the husband buys few clothes, in fact goes shabby, and buys only cheap garments; partly because his wife insists upon wearing showy gowns and bonnets beyond the family resources, sensibly utilized. It is sense to dress well—as well as your purse can afford, but it is nonsense and folly to go beyond that, just because some neighbor can afford a little more.

LECTURE TO GIRLS.

BY PROF. L. A. STANDISH, OF NEW YORK.

REWARDS OF VIRTUE.

Children were always born under perfect conditions and with a proper inheritance on both sides of the family for many generations back, and further, if the early environments were always what they should be, children when they grow up would be inclined to do only what is right and proper. But we all know there is not one in ten thousand that is so marvelously fortunate. Neither the parents nor the children have any control over the influence of heredity, nor have they control over the early environments. Therefore it is that children as they grow up are so often inclined to yield to temptation and depart from the paths along which, and only along which, real happiness can be found.

There is no more awful hell of suffering on earth than the pangs of remorse from which you can never escape for one instant, while on the other hand, there is no joy so constant and so exhilarating as is the sense of satisfaction—of pleasure that comes from a clear conscience. Besides, all who have had experience, no matter what their age, will unite and do unite in declaring that a great amount of misery always follows a small amount of pleasure secured through forbidden paths.

The old saying that "virtue is its own reward" would be more nearly true if changed to "virtue brings its own reward." What, after all, is the greatest boon that can come to any one? Wealth? No. Fame? No. Pleasure? No. It is none of these. It is the good opinion of our fellows. The love of those with whom we associate. If we have that it gives us more pleasure, more real happiness than all else put together. Then is it not the part of wisdom to seek, to desire, to so order our lives, to so conduct ourselves, as to gain this good opinion of others—this love of our immediate companions?

And believe me, girls and boys, too, for that matter, there never yet in all the world's history, has been found one single instance where this-thing-so-much-to-be-desired was obtained through a departure from the ways of virtue and rectitude. You yourself cannot, if you try, love for any great length of time a companion who is mean or who cheats or who sells any part of his or her character for temporary pleas-

are. You cannot do it. It is contrary to the laws of nature, which are the laws of God. But on the other hand it is easy to love an acquaintance whom we learn to feel we can trust perfectly ; we know that they will always do what is right in all times of trial—we say that we know it simply because we feel it, and we *feel* it simply because the other party by really *being so in her heart* causes the feeling. This is indeed one of the clearest examples of instinct among human beings. The feeling never comes and never stays unless the other party is really *true at heart*. You see God has made it a law of our being that all the best things—the things everybody agrees on as being the most desirable things—come as a reward of virtue.

WAYWARDNESS.

Above Niagara there is a portion of the river where the water seems as smooth as glass. On a warm summer evening one is tempted to drop the oars and let the boat drift as it will. Danger would never enter the mind of any unwary voyager who had had an experience of the angry waters below. But any one thus drifting is likely to hear a voice from the shore.

“Boat ahoy! Aho-o-y!”

“What is it?”

“The rapids are below you. Pull for the shore!” And woe betide the fool hardy ones who heed not the friendly call. For though the water is so calm and the boat seems to lie so still it is slowly but surely being sucked by the undertow toward the rapids. Once upon these and his pulling is in vain. His doom is sealed.

How very like this is the fate of the young girl, who, to gratify a longing for excitement perhaps, or out of pure abandon, neglects the good advice of her mother and allows herself to float upon the giddy stream of error. She is not bad, would not be for the world. The mere suggestion of a shameful act would cause her anger. Never would she be guilty of that, “Only a little wayward,” say her friends. Ah; could she only see the future and catch a glimpse of the pitfalls and the mire that lay a little further on along the path she is pursuing, how quickly she would stop. But she is drifting toward the Niagara where so many thousand every year made shipwreck of their young pure lives.

THE FIRST WRONG STEP.

It is so like youth to say, “Oh, pshaw! I’ll quit in time enough! Don’t you fear for me! I’m just having a little fun, but I shan’t run into danger. I’m all right!” etc. If it were only so. Innocent and trusting youth! She knows not that the tempter will always take her unawares and she will never *never* recognize him till it is too late. Would it were otherwise. But so it has been since mother Eve dwelt in the garden and will always be till the millenium. The only time that you can safely stop is before you take the first step. It is easy then to say no and to fall back upon your native purity and pray, “God keep me beautiful within.”



J. G. HOLLAND.

LECTURE TO BOYS AND YOUNG MEN.

On the rewards of honesty.

On the advantage of truth and veracity.

On how to determine a suitable occupation

On evil effects of intemperance and profanity.

On injurious results from the use of tobacco.

On industry and economy the highway to wealth and fame. See page 199.



PROF. L. H. STANDISH.

LECTURE TO GIRLS.

On rewards of virtue.

On waywardness—evils that beset the wayward.

On the first wrong step.

On bitter toils of fallen life. See page 193.



HARRIET BEECHER STOWE.

ADVICE TO CHILDREN AND YOUNG PEOPLE

On disobedience and ingratitude to parents.

On success won through obedience.

On evil consequences of disobediences.

See page 203.



After the first wrong step the next is so much more natural. It does not seem so bad after all. There is no use in mamma being so strict anyhow. Well you are on the glassy still water just above the rapids now. How long will it be till your boat strikes the rapids? That no one can say. It may be years, it may be months, it may be only days. But when you are caught, God pity you.

BITTER TOILS OF FALLEN LIFE.

The writer once knew a beautiful woman—when he first met her she accidentally ran against him on a lonely walk on the river bank of a Missouri town. She was beautiful, in face and form, but an oath escaped her lips in reply to the “pardon me”—she was only 23. A year later in a tent on the banks of the same river he saw her die in pain from the effects of a loathsome disease contracted amid the shame that our cities license and permit. He had tried before, in vain, to help her forsake her fallen course. Now she was thankful to receive one kind word. She had been the petted favorite of the haunts of vice, now forsaken by all, and to me, a stranger, on her deathbed she told what a hell had been in her heart during all the time. Scarcely a moment's animal pleasure, but what was haunted by a mental woe within. And oh the heartaches when by herself alone. “And then” she said, her voice broken by sobs, “it was torture all the way. As a girl I was a little wayward—I liked to have a good time—I went with him some—he was such a nice boy, so were some of the others and we were only having a good time—of course, mother tried to stop it all and finally I ran away—I can't—I can't tell it—I'm too weak—it didn't come out as I expected—it's all misery.” And with the cry “I'm lost” she died.

It is fortunate for the world that the maker of us all has put in our hearts a little monitor whom we can never escape. We can sometimes escape from foes and run to friends, but our own consciousness becomes a foe when we have done wrong and we cannot escape from it.

LECTURE TO BOYS AND YOUNG MEN.

BY J. G. HOLLAND

Many years ago P. T. Barnum, the noted showman, traveled throughout the United States giving lectures on “Success in Life and How to Make Money.” In the course of these lectures he emphasized the three great essentials to a young man starting in life as *vocation*, *location* and *honesty*. Ability was an advantage, but he declared, and the declaration is proven by experience, that boys lacking any marked ability but following along the lines suggested, won far greater success, than brilliant, smart boys who followed their inclinations, or were induced to go in paths contrary to the teachings of experience.

REWARDS OF HONESTY.

A ragged newsboy in Chicago whose route lay along Wabash avenue, was handed a dime one evening for his paper. He had no change, but

the man wanted the paper. "I'll git ye the charge, Mister," he said. "All right," said the customer, as he went back into the parlor. But when half an hour later no change had been brought he gave up his confidence in that boy's honesty. But just as he was about to retire, nearly ten o'clock, there came a ring at the door-bell. Going to the door he found a diminutive youngster who held up a little hand with nine pennies in it and a piping voice said: "Here, Mister, is yer change. Bob he got run over by de cars, and dey bring him home in der perlice wagon, and he say he was bringing de man his change, and he could not rest and could not stand it till de money was brung, so I brung it." The gentleman took the change and asked the boy's address. Next day, calling at the dingy back rooms where the little fellow said he lived, he found the boy to whom he had given the dime lying in his little cheap bed, out of his head, and moaning now and then, "Tim, Tim, you must git the change for the man; I said I would, and he'll think I stole it." The gentleman learned that the boy, while on the way back to return the change, was run down by a car unnoticed and found a little later by a policeman. The gentleman sent his own physician to attend the boy, who finally recovered, and after that paid his poor widowed mother enough to enable her to keep the boy in school and start him in an honorable business career.

We put honesty first, because it is more important than any other one thing in order to get on in the world. Too much has been said about shrewd traffic—about getting the better of your fellows. But there is nothing that stands more in the way of winning success in life than the meanness that comes from dishonest practices—and by dishonest practices we mean not alone taking something that don't belong to you—violating the law of the land—but any act of unfairness toward others. It is just as dishonest to fail to give what you know you ought to give as it is to steal. It is just as dishonest to live beyond your means, or to speculate with borrowed money, or to keep what you find and can find an owner for, as it is to break into a house and rob; and every dishonest act will make a smaller man of you, less capable, less thought of, less free. There is no misery on earth so painful or so impossible to get away from as a tortured conscience. Money can buy lots of things, but it can never buy happiness, never buy a clear conscience, never can buy that gloriously independent and free feeling that comes from one's own inner satisfaction.

"And this above all, to thine own self be true,

"And it must follow as the night the day

"Thou can'st not then be false to any man."

ADVANTAGES OF TRUTH AND VERACITY.

If you never tell a lie you cannot be dishonest, for the first time you steal an apple or a penny or fail to return what you know belongs to some one else you tell a lie to your own soul and you act a lie by keeping the thing "sneaked," even though nobody knows about it but yourself and one other. There is always one other knows besides yourself—God knows and you know. Gladstone, when a boy, once took a

thrashing from two older and bigger boys because he would not go to a neighbor and tell him a false story which the bigger boys told him to tell. He afterwards found out that if he had told that false story he would have received two whippings—one from the neighbor and one from his father when he found it out. It always pays to tell the truth.

HOW TO CHOOSE VOCATION AND LOCATION.

One of the most important things for a young man about to start in life is his choice of a trade or a profession or a line of work that he intends to make distinctly his own. The thousands of wrecks and failures in life are mostly, if not altogether, due to neglect upon this matter in youth. They simply drifted along, taking up whatever presented itself, and consequently soon found themselves in a business that they were not fitted for and disaster followed as a matter of course.

Every one is best fitted for some special sphere in life. Early inclination or aptitude is usually the best guide, and that parents should look for in their children and cultivate. Above all they should not go contrary to the apparent wishes of the child in order to have the child take up some pet vocation which the parents have set their hearts upon his following. Nature points the way in almost all cases, perhaps in all cases if we give heed to her still, small voice.

The same thing may be said regarding location. One thrives best where he is best pleased. If the location is distasteful it is usually better to seek one more in accordance with one's natural preference.

EVIL EFFECTS OF INTEMPERANCE AND PROFANITY.

Fun and hilarity are as natural as life. And it is right and proper to seek and enjoy them. But no one puts a greater stumbling block in his path than he who begins to form a habit of swearing or of drinking liquors. To see a drunkard or to hear a profane man for the first time is enough to fill any one with disgust. What sense then is there in any boy or young man beginning to do the things that after awhile will cause those who see them to feel disgust for them? And worse yet, it is not long before you begin to feel disgust for yourself, and you can't get away from your own company.

Swearing don't help anything. It neither makes "one hair white nor black." It weakens every expression to which it is added. It is simply and purely a habit caught by contagion, like small-pox, and cultivated by practice till it deforms the person habituated to it and injures his chances in every career in life from the humblest to the highest. Do not begin to swear, or if you have already begun, quit. That shows sense and ability. It is only very weak persons who can't or won't quit. So, too, with drinking and all other forms of intemperance. Young man, do not take the first step to intemperance in speech, or deed, or thought. Or if you have already done so, stop now—now, when the call comes to you. Now is *always the best time*.

TOBACCO HABIT.

Do you know of anything more filthy and more useless than the chewing and the smoking of tobacco? Just think of making chimneys

of your mouths and spitting smoke into other people's faces. Or to make a sewer of your mouth and chew and spit the vile brown juice from the wads made of the leaf of the weed, that no animal will eat, and known as the tobacco plant. Worse yet, when you know of the nasty way it is soaked and prepared and packed into, not over clean boxes, and handled by scores of dirty hands before it enters your mouth. It is a prolific source of dyspepsia. Smoking especially produces all kinds of nervous disorders, is one of the large causes of insanity and of kidney disease as well as of rheumatism and neuralgia. The nicotine contained in the poisonous weed is dangerous to health even when taken in minute quantities. The use of tobacco is one of the chief links that still bind the race to its ancestry of barbarism. It will never stand the advance of civilization. Let it severely alone.

INDUSTRY AND ECONOMY THE HIGHWAY TO WEALTH AND FAME.

What is it you want? Not now, but in your sober moments, when you think it over. A good time now—a little indulgence now and poverty and discontent for the rest of your life, or a little self-denial now, and years of pleasure after?

As sure as fate it may be stated that the only highway to wealth and fame is economy coupled with industry. The world is full of examples of brilliant, bright boys, who became poor, wretched, ruined men, while their ungifted brothers or neighbors have won ease and comfort or fame and riches. How was it done? Simply by the practice of economy in youth or before they had won independence and all along persistent industry. There is no royal road to fame or wealth. It is a universal experience that the path to success means tireless industry and the cutting off of the little leaks in resources that swamps so many every year.

Read over and over again the suggestions we have given. Abide by them and you will succeed. Disregard them and you will be sure to sink, perhaps to find a life of degradation and poverty. A life is not accident. Things do not "happen." As a man soweth so shall he reap. And if he sows nothing he will reap only the whirlwind.

ADVICE TO CHILDREN AND YOUNG PEOPLE.

BY HARRIET BEECHER STOWE.

On Obedience and Gratitude to Parents.—"Children, obey your parents," used to be the injunction forced upon us in our childhood days, but which in these times is falling into disregard. Children, almost as soon as they reach a school age, begin to do things contrary to the wishes of their parents and, unfortunately, too many parents are negligent about teaching the young in early life the value of obedience. The child, incapable of perceiving that the motive of parental restraint is the child's future happiness and welfare, thinks it is the suffering victim of the parent's power.

But it must not be forgotten that from birth to death we are all subject to higher law, and almost all our evils and our suffering in life come through disobedience. This entire nation, almost, suffers from dyspepsia, because in early life they had failed to learn to obey the laws of health in their eating and drinking. Government is possible only by having laws and by obedience to those laws. All success in business is made possible only by having some in control and all the rest obedient to the instructions given. Armies win battles only by the absolute blind obedience of the soldier to his commander. In fact, the necessity for obedience is apparent in every avenue and condition of life.

Success Won Through Obedience.—How absolutely necessary it is, then, that the young should have it impressed upon their minds, early, that obedience to rightful authority is their first and most imperative duty. Their chances for success and happiness in life depend very largely upon how well this lesson has been learned. In order to know how to command you must first learn to obey. The only true and natural place to learn this lesson is in the home. By yielding strict obedience to their parents, who are rightly set in authority over them, children learn to obey the laws of God, of nature, of their country, of society, of business, and by so doing can win success and happiness.

Evil Consequences of Ingratitude.—On the other hand, when a child disobeys its parents and becomes ungrateful for what they have done for him, it is not uncommon for the parent to disinherit such a child. Who does not know of Mr. George M. Pullman, the founder of the Pullman Palace Car Company, and his disobedient sons? Had it not been for others these ungrateful sons would have received comparatively nothing of their father's great wealth. And this is only one instance among thousands where children lose fortunes as the result of disobedience.

No words of condemnation can be too strong to characterize the base ingratitude shown by some children. After the parents have reared them, sent them to school, cared for them in health and in sickness, they turn about, and, forgetting all they owe, so shamefully treat their parents as to hasten them to the grave in sorrow and grey hairs.

It is a lamentable fact that the world is full of ingrates. It seems only too true what one aged grief-stricken parent said: "It seems to be the rule that the more parents do for and sacrifice for their children the less gratitude they receive for it. After a whole life of labor and sacrifice, their last days are made infinitely worse than the first days of struggle by the sad ingratitude of their children.

How Parents Teach Their Children to Lie.—I wonder if parents ever stop to consider that if even only once they threaten a child with punishment and ask for a promise "not to do so again" they are teaching that child to lie. It may sound harsh yet if they will stop to think, they can hardly expect any other result.

The young are impressionable, and easily led into right ways and still easier driven into wrong ways, and it is the most natural thing in the world for the child to deny the truth if thereby it thinks to escape punishment. Scolding and whipping are both relics of barbarism. You can lead your child infinitely farther and much easier by love than with a whip or with sharp words and clouded brow.

APPENDICITIS.

The popular notion that this, so often fatal disease, is caused by a seed or some other foreign substance becoming lodged in the vermiform appendix, or blind intestine, is no longer to be accepted as true, according to the expressed opinions of many leading physicians. The records of Bellevue hospital, New York, show that in 140 operations performed for appendicitis not more than 5 actually had a seed or other foreign substance lodged in the appendix. Recent investigations lead to the discovery that this disease occurs chiefly among men, rarely among women. It was also found that it very rarely occurs in men whose occupation requires them to stand upright or walk. It is held by some physicians that the disease is caused wholly by undue pressure on the vermiform appendix, and that this pressure is induced mainly by the habit of sitting cross-legged, with the right leg thrown over the left. (The appendix, being on the right side, is subjected to pressure by this position, which in time causes inflammation and appendicitis. The remedy is obvious.)

Another quite frequent cause is stated by a Chicago surgeon to be the habit of using *excessive* warm water injections to produce a movement of the bowels or to "flush the colon." Some of the fecal matter, or water carrying it, is thus forced up into the intestines and this fecal deposit, lodging in the appendix, produces inflammation and serious trouble. Great care should be taken in using rectal injections. Do not use water in excess or force it up too far.

Osteopathy. Osteopathy is a comparatively new branch of the healing art, first definitely practiced and taught at Kirksville, Missouri. Placing full reliance on the old and oft-repeated assertion that "The blood is the life," they claim that the continuance of any disease is due to a lack of fresh blood to the parts affected, and that in nearly all cases the lack is due to a constriction of the tendons or muscles or to an improper adjustment of the bones. Bad habits or injury to a muscle or some other accident is always liable to produce a maladjustment of the bones in some part of our complicated structure, and this improper position causes pressure upon some delicate blood vessel, impeding its flow or sending it in some other direction and thereby causing insufficient nourishment at some point which by and by develops into disease. Hence the first object of the osteopath is to seek by proper massage to replace the right adjustment, relieving the pressure and restoring the full, free flow of the blood. To the extent that this can be accomplished the science of osteopathy is a healing science, but that, strictly speaking, or even as practiced, it is a panacea for all human ills is probably about as nearly correct as the similar claims of other "pathies."

Test for a Good Husband. Prof. Goodrich, one of the greatest experts in reading human character, was once asked by a young lady to tell her how she could determine whether a certain young man, who was keeping company with her, would make a kind-hearted husband. She was a little afraid about getting married because it was such a very important step.

The professor declared that his best advice was, to introduce her young man to some old lady and leave him alone with her for awhile, the longer the better. Then ask the old lady what she thought of him. Also, to introduce the young man, incidentally of course, to a young baby, and "do not stay around yourself." Get the baby's opinion of the young man from the baby's mother or nurse. If the baby likes him and pulls his mustache or "crows" to him, it is a sure sign that the young man may be trusted. Babies and very old persons are the very best judges of human nature. With either, the young man will be off his guard, unless he thinks that he is being watched, and act out his inner nature. The baby will intuitively feel an unkind presence and promptly turn from it. The old lady whose sight has grown dim depends more upon her inner or intuitive impressions, and is rarely mistaken when she does. This, he declared, was his very best advice.



TEACHING THE CHILD THE FIRST LESSON IN LYING.

The parent when punishing the child will say "TOMMY, WILL YOU EVER DO THAT AGAIN?" Tommy will say, "I won't never do so any more." He lied when he said it. He was forced to lie to avoid being punished, or to save himself another blow.

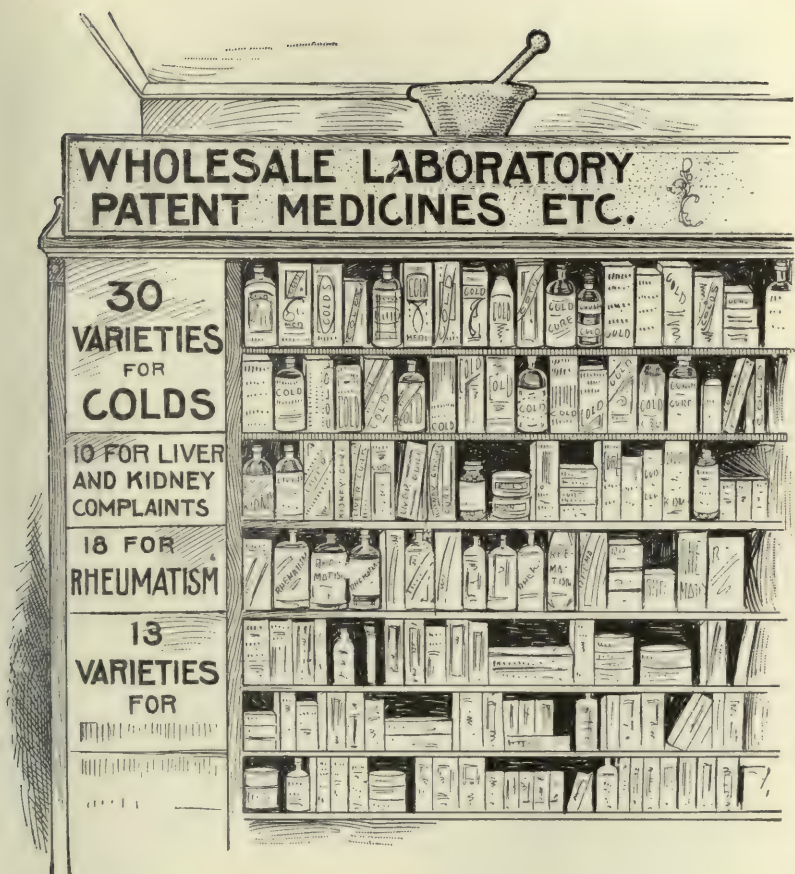
By reading page 204 it will be seen how easily parents lay the foundation for making liars out of their own children.



APPENDICITIS.

Simple preventive of this dread disease.

Grape seed or other seed in the appendix very rarely the cause. See page 204.



PATENT MEDICINE DELUSION.

The greatest deception in the world, destroying health and life, causing insanity and robbing the pocketbook.

If people could only know how they are being duped and deluded and beguiled out of their money, millions of hard-earned dollars would be saved. See page 211.



TONICS AND APPETIZERS.

Were it not for the vendors and for those who are interested in the use of tonics and appetizers and make their millions out of them, and who herald their great would-be virtues all over the land, they would have gone **long years ago into oblivion**, together with the doctor's blood-letting lancet.

For their injurious effects read page 211.

THE DANGER IN TONICS AND APPETIZERS.

Prof. De La Vere of the Polytechnic in London writes: The numerous nostrums, patent or otherwise, that are advertised extensively and constantly urged upon a suffering public, often, we regret to say, by members of the medical fraternity who are supplied with sample bottles and laudatory articles free of cost, do as much to injure the public health and the well being of the community at large as any other one thing that may be named.

Whoever induces people to throw overboard all such bolstering-up-of-a-bad-case practices, and teaches them to lend a deaf ear to the inducements offered by the venders of tonics and appetizers, is a public benefactor.

The great injury of all these "remedies" or so-called "aids to digestion," lies in the fact that they only hasten the death of important tissues that have been injured. Unless some of your organs are sick you feel no desire for tonics. When some predisposing cause makes them weak and nature demands rest, you take tonics to stimulate or force action upon the sick parts to their *certain undoing if persisted in and their immediate further injury if indulged in at all*. Infinitely better, and of much quicker effect, is to find the cause and remove that. Rest for the sick organs is usually sufficient; rest for a few days or weeks, as the case may be. The simple matter of abstinence from food for a time is very much more sure to cure than any tonic, and is cheaper. There are numerous cases of serious gastric disturbance wholly and permanently cured by living for six weeks or longer on a diet composed exclusively of scalded milk, and that without losing a day's work or much strength. At the end of the time nature had healed the sick tissues that were not over-stimulated, and now the person could resume his former habits and eat with impunity any decent food set before him. When nature requires food she will call for it without the intervention of any "appetizer."

She Certainly Knows When it is Needed.—Good food, that contains the elements to make bone and sinew is the tonic, in something that strengthens, is true tonic found. Our good judgment ought to teach us that such a thing can't and don't inhere, cannot be found in a tiny vial of medicine. Venders, though, of course, who make millions out of these articles, will laud their virtue.

PATENT MEDICINE FOLLY.

No doubt in the early career of patent medicines there were good and valuable remedies among them, but when it was found that the manufacture and sale of these medicines was a very lucrative business, counterfeit and spurious articles at once began to make their appearance, until now the country is flooded with scores of these remedies for each and all of the ordinary maladies that afflict mankind.

It must be evident to ordinary thinking people that there is not to be found in the domain of nature a multitude of efficient remedies for all these diseases, and these remedies multiplying still more rapidly than

ever. But it is said: "All these venders of patent medicines have the best of evidence in the way of living witnesses, to the effect that their remedies have and are constantly curing the people." In reply to this claim, we would repeat the words of the late Dr. J. H. Bundy, of California Medical College, who made the statement (and many other honest physicians have done likewise), that five diseases out of every six with which people are afflicted would get well of themselves if no medicine were taken. People get well any way, and often in spite of the medicine taken. It is, therefore, very evident that the patent medicine vender can get testimonials from people who would have recovered anyway, while the medicine is given the credit for curing the patient.

The writer once was in possession of formulas for some valuable medicine that he thought of putting on the market as a patent medicine. On consulting with some experienced druggists in regard to the matter, their reply was: "The value or efficiency of your medicine will have nothing to do with the success of its sale; that will depend entirely on the amount of advertising you give it. The ultimate success will depend on the size of your purse. Colored water will answer just as well as anything else as far as the success of the enterprise is concerned."

The best and most effective patent medicine that we ever knew, namely, "California Imperial Cough Syrup," was a complete failure when placed on the market, for the simple reason that the owner did not have the capital to advertise it successfully.

These facts prove the utter fallacy of placing any dependence upon patent medicines. While it is no doubt true that some people think they have been cured by this or that patent medicine, it is equally true that some have been cured by "dough pills" or sugar and water prescribed under Latin names by the family physician. In nearly all cases the patent medicines are actually injurious. When once the eyes of the people are opened to the stupendous fraud of these remedies that owe their success purely to the amount of advertising they get, they will no longer permit themselves to be thus imposed upon. It is now generally conceded by health experts that patent medicines have done so very much more harm than good, that if all of them could be swept into the sea, the public health would be immensely benefitted.

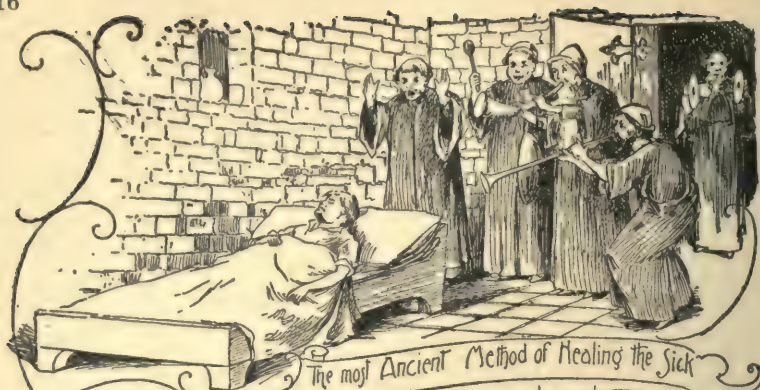
SPRING MEDICINE FRAUD.

There is no greater fraud practiced upon the people than that which has its origin in the prevailing notion of the need of a "spring" medicine, which, quite naturally, the venders of patent medicines do all in their power to bolster up and to increase, as their living, or rather their opportunity to become wealthy, in part depends upon it. Hundreds of thousands of bottles of spring medicine are sold every spring at from 75c to \$1.25 a bottle, which contain practically nothing but some simple herb, dissolved in alcohol or water and flavored. The people ought to know that the basis of the best of these is nothing more elaborate than a decoction of the bark of the sassafras root, which

grows wild in many parts of the United States, and which may be purchased for a trifle in any drug store. Ten cents worth of sassafras root will make three or four bottles equal to the usual dollar bottle of patent medicine, and, if it were only known, quite as effectual. In reality, a "spring" medicine is no more needed than a "fall" medicine by most people. The system is far more apt to be depleted and weakened by the heat of the summer than it is by the purer condition of the winter. Hence, if a so-called "spring" medicine is ever needed, it is needed more in the fall than in the spring. The popular notion that the blood becomes impure in the spring is no more true of that period than of other periods. It is most likely to follow a period of comparative idleness, or overeating, no matter what time of year. The remedy is care in the diet and one or other of the simple nature remedies, such as given in Vitalogy under the proper headings. A good spring remedy is made by crushing a piece of sassafras bark and making a tea of it, and drinking from half to a tea cupful three times a day, after meals.

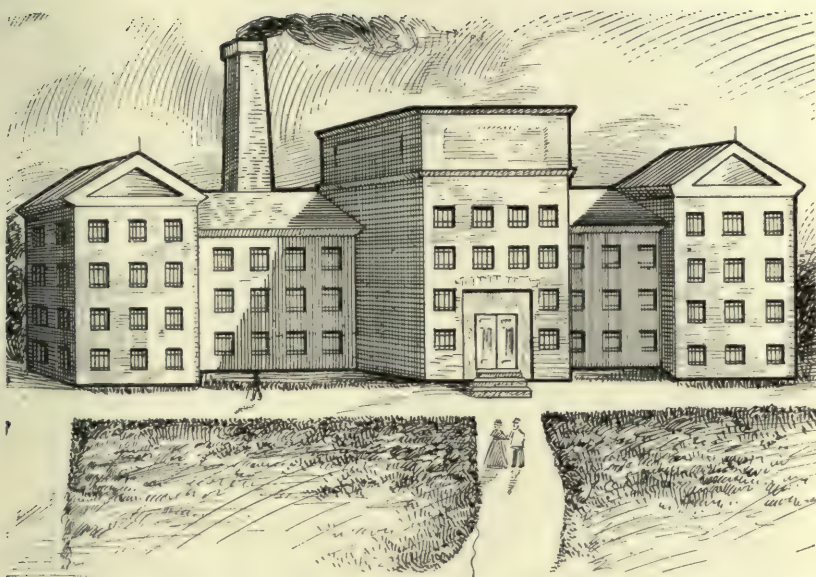
INSANITY CAUSED BY PATENT MEDICINES AND DRUGS.

Every state in the union has one or more great insane asylums, nearly always filled to overflowing with patients. Various causes are given for this prevalence of insanity, but the real underlying cause is rarely mentioned. Statistics partly indicate that from 12 to 15 per cent. of the cases are due to the consumption of alcoholic liquors. A somewhat larger percentage is due to love affairs, sudden adversity and other recognized causes. But what of the rest? Some of the best thinkers and students in this country have reached the conclusion that the primary cause is to be found in the almost universal use of drugs and especially of "patent medicines." The metallic and vegetable poisons contained in these medicines remain as deposits in the system and attack the nerve centers, causing disturbances and weakness which in susceptible persons produces insanity. This deduction is supported by the fact that the increase of insanity is shown to have kept pace in almost exact ratio with the increased use of drugs and patent medicines. Indians and uncivilized races who do not use drug remedies have no asylums and very few or no insane. Cast aside patent medicines and drugs and in a few years our many insane asylums would be largely emptied of patients.



For ages all nations supposed that the sick were possessed of evil spirits, and the "practice of medicine" consisted chiefly in efforts to frighten away these spirits. Hence loud and discordant noise, beating drums, blowing horns, clashing cymbals and yelling, done chiefly by those who acted as doctors of divinity. Later on all sickness was supposed to be caused by bad or impure blood. Then came the period of bleeding and dosing with powerful and pernicious drugs.

In these modern days the relics of the old time are gradually giving way to better, simpler and more natural methods.



INSANE ASYLUM.

There are over 100 of these large institutions in the United States, all of which are filled chiefly with victims of patent medicines and other drug remedies.

The American Indians and semi-civilized nations of other countries have no patent medicines or drug remedies, consequently no insane to fill asylums with .See page 215.

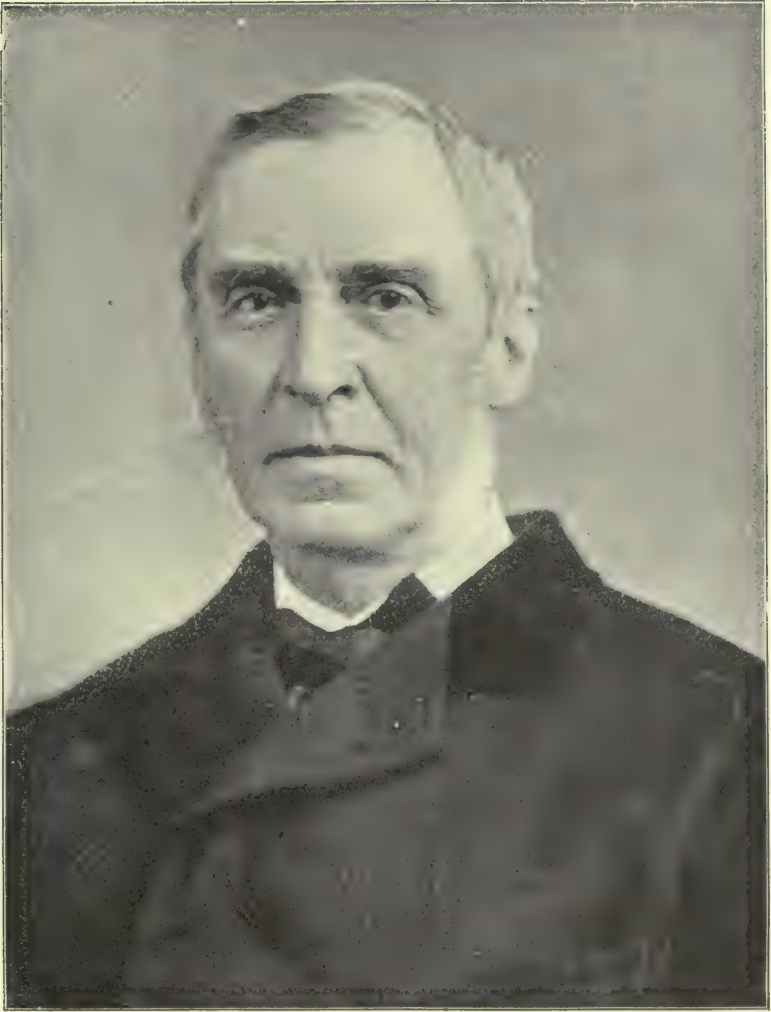


DR. JOHN MASON GOOD.

This celebrated English author and physician in his last contribution to the Medical Magazine writes: "Medicine has destroyed more lives than war, pestilence and famine combined."

He further says: "A good motherly old lady is more valuable in a family of children than any physician."

(Wouldn't Vitalogy be of more value in a house than any two old ladies?—Editor.)



B. F. CLAYTON, M. D.—U. S. SANITARIUM.

This eminent physician once stated: "No greater **imposition** could be practiced on the people than to **foist upon them** the so-called **Family Doctor Books** found in almost **every house**, and that advise **drug remedies** which only a trained physician is **capable of prescribing**. If someone would bring out a book of **home remedies**, regular '*grandmother's medicines*,' he would have something that would be a **blessing** in every home."



DR. F. MAGENDIE.

This celebrated physician and author, in one of his published *lectures*, writes: When I was chief physician at Hotel Dieu Hospital, Paris, some 3,500 patients passed through my hands during a year. Before my term expired I tried the experiment of giving one-half of the patients that were then present no medicines at all; the rest the usual medical treatment. The former were given, instead, only what is known as "Food and Home Remedies," and, to my unbounded surprise, they ALL got well—not a single death; while among those receiving medical treatment the customary number of deaths occurred. A second trial yielded a like result, and I was converted. Ever since I have given but little medicine to my patients.

DIVISION FIFTH.

HOME.

BY C. D. M. CAMPBELL.

This is one of the most common words which we all understand, perhaps, after our several fashions, but which none is able precisely to define. It would seem to mean one thing to one man, and something quite different to another, very much according to the capacity, culture and disposition of each. Our ideas of home are somewhat like our ideas of God. The Great Spirit of the savage does certainly not much resemble the God of the enlightened Christian. Many of the attributes of these beings are just the opposites of each other. But, behind the crude or imperfect notions of each there might, perhaps, be discovered a Divine Reality, if one were only wise and great enough to find it. So, though men differ widely in their conceptions of what constitutes a home, there may possibly be some common elements, apparent to the eye of a close and exclusive analysis, in which all would agree, and which must therefore constitute the real and only essentials of that substantial thing which all men quickly recognize, but upon all the conditions of which so few are entirely agreed.

ITS INDEFINABLE CHARM.

It would further seem that, among these essential elements of home, and perhaps first among them, is a nameless if not wholly indescribable charm. This is like the fragrance of an odoriferous shrub or flower, which proclaims its neighborhood through miles of distance, and is strongest in the silence and darkness of the night. Something like this is the charm of home. The heart scents it from afar, when the eye cannot behold it, and gloats on the ideal picture of its beauties amidst the silence of solitude and the blackness of actual desolation. Hence, none have written more eloquently upon the charms of home than the homeless. The author of "Home, sweet home," was a wanderer and an exile, and sang but the passionate picture of his own sad and lonely heart. Rest, peace, love, friendship, joy—these, and much more which we cannot name or characterize, are the constituents of that wonderful charm which dwells in the word Home. These are the breath of

its fragrance and the odor of its thought. These, with the simple utterance of the name, let into the heart, as through an open window, the light of beauty and the atmosphere of purity, and it is these that render a home, whether real or fancied, "the dearest spot on earth" to every man.

THE COMMON IDEAL.

The influence of this most wonderful and sacred of all institutions is, in its nature, purely centripetal, or attractive; it is the gravitating force which restrains humanity from wide and lawless wandering, and it operates in two directions; it pulls forward and it drags backward; it incites to build, and it acts to restrain. Its antitype is in the heart of every good man and woman. It is an ideal picture, which all feel that they must somehow place upon the canvas of their lives; an imaginative structure, which they must build at the cost of all their earthly possessions, or life itself will be destitute of meaning and of end. To this, they are naturally and irresistibly drawn. This is the meaning of labor, of enterprise, of thought, and of all the passionate attachments of the heart. The visions of the youth, and the dreams of the maiden have this common interpretation. The apparently mysterious forces of sexual, kindred and social attachments and aversions find here their clear solution, and draw hence all their spring and energy. Love and hate, friendship and dislike, coldness and indifference, the realities of time, and even the visions of eternity, are inspired by this passionate longing for home. It is just because this longing is so seldom satisfied, this vision so rarely realized; because the actual experience of home has disappointed by its imperfectness and pained by its discords; it is because of this that men and women, despairing of their ideals in this world, have looked to realize them in another and better, and so come to think that the disappointments of earth may be atoned for by the fruitions of heaven. It is thus seen that the design of all theology, and even of all religion, is the realization of this common desire for a perfect home, hell itself being but the everlasting limbo to which the revengeful heart consigns the enemies and disturbers of its domestic peace.

ITS RESTRAINING INFLUENCES.

Imperfect, however, as is the home of earth, and far as it commonly falls short of realizing the ideal of youth and maturity, yet, once built, according to man's best, it throws around him an indissoluble chain. To maintain it in being and add to its attractions, becomes now the one purpose of his life and labor. For this, he toils by day and watches by night. In the field, the shop, the office, the laboratory, the library, the forum—everywhere—the worker works for home. Allured to the paths of adventure, vice or crime, he is held back by the tie of home. Driven to despair by want or

woe, and longing for the rest of the grave, the rash hand of the suicide in thought is paralyzed by the memories of home. Frantic with rage or bitter with revenge, the thought of direful consequences to those he loves curbs the wrath which might wreak itself in blood. If he is a good citizen—the conservator of those moral influences which hold society within the bounds of order and decorum—all this is due to the domestic stake he must venture for the gratification of an illegal avarice or illicit lust. In short, the factors of every enduring social state and the constituents of every permanent and advancing civilization, lie in the homes they embrace and of whose tender energies they are the crystallized expression. If there be virtue, honor, worth, purity and peace on earth, they were born in its homes and will perish with their extinction.

THE INTEGRITY OF HOME—THE SAFE-GUARD OF NATIONAL STABILITY.

The convulsions which occasionally shake society to its national centres and threaten the overthrow of all the institutions which Time has consecrated, issue from those apparently sudden and cyclic changes which periodically occur in the domestic temperature of the world. When at any period in the history of a nation, love becomes a jest, friendship a myth and honor a name; when the night of Despotism has settled down clear and cold and drear, extinguishing those fires of purity and trust which burned upon the hearth of home; then the wild ruffianism of the individual man breaks forth in anarchy and blood. As it was with France in '89, so will it be with every nationality on the earth; when the state, by its arbitrary social distinctions and unequal laws, invades and tramples upon the sacredness of home, it simply takes its own life; because the state is the product of its homes and has unnaturally destroyed those factors of which its dignity, grandeur and authority were the mere multiple. When the state becomes paternal in its government; when it undertakes to educate or to regulate, in any other interest than the conservation of the public peace, the children of its citizens, then it usurps the highest and dearest prerogative of the royalty of home, and it will, in time, snatch all the others; and then, indeed, it will have committed national suicide, for society will dissolve and go back to its original elements. The Spirit of Progress, so-called, who now stands embracing the pillars of the temple of our National Freedom, is the Blind Sampson, whose strength is coming fast, and who will soon bow himself to bury all in a common ruin.

THE FIRST CONDITIONS OF HOME.

Such, then, being the influence and effects of the home, it may be well, if possible, that we should form some distinct conception of its essential conditions.

The first of these is, obviously, the presence of one man and one woman, who have mutually chosen each other out of all the world, and who are held together by the same attraction of mutual and exclusive choice. This it is that makes true marriage; and those, and those only, who are thus wedded are true husbands and true wives. They may be of any faith, or of no faith. The ceremony which united them may be gorgeous and elaborate as that of Rome, or simple and natural as that of an untaught savage. The essential thing is, that they love and prefer each other to all the world. This being granted, they are the common centre of the circle of home. They make its earliest constituent, and its prime and essential condition. Without this, there may be much that is charming and bright, but there is no home. Indeed, whatever of brightness or of charm may be discerned in those broken circles to which this element is wanting, will be found, on a careful examination, to owe their presence to the sacred memory and still potent influence of this primal fact. If the children cling to the old roof-tree, under whose shelter sits the lonely and widowed husband or wife, it is because the vacant place was once so honorably and tenderly filled that the simple recollection of the lost has still the power to charm and bind. It is a power so enduring and sacred that death itself cannot quite cancel it. This, then—the presence of one man and one woman, joined together in a tender and sacred union of hearts—makes the earliest element of the real home.

CONSECRATED BY TIES OF PARENTAGE.

The next—and the immediate and proper consequence of this—is the presence of parents and children. When the loving wife ripens into maternity under the chaste and tender influence of her husband's embraces, she is not only fulfilling the ends of Nature and the law of God, but she is adding another and equally essential constituent to the home. Indeed she is helping, as in no other way so efficiently she can help, to build the home. Not all the domestic virtues combined can atone for the barrenness. This is the greatest of all misfortunes. Until her babe smiles in its mother's face and coos in its father's arms, their common being is incomplete. Strange and awful depths of tenderness are unsealed by the presence of the little one, whose waters could never else have purified and gladdened the hearts of the husband and wife. Holding this treasure in their arms, they taste a divine joy and unlearn the hardened selfishness of life. Their union is now first complete. They are not merely husband and wife, but the common parents of that bud of being which they see unfolding under their eyes; and this fact invests either with a new and unspeakable dearness to the other. It is no longer John and Jane, that each sees in the other, but the father and mother of my boy; and both feel that the mutual tenderness of wedded love bore no comparison to the mutual tenderness of wedded parentage.

And besides this, the birth of the little stranger has, in some new and mysterious way, made them akin to all humanity. The childhood of the world has crept into their bosoms and made its home there. They love all children for their own child's sake. Even the beggar's brat, which they were wont to pass with disgusted feelings and averted eyes, seems now to be invested with a new and inexplicable charm. Their eyes have been somehow unsealed, so that they can look through the dirt and rags down to the angel nature which they hide.

SACRED DUTY OF MOTHERHOOD.

It seems hardly conceivable that any wife could be willing to forego this divine joy of motherhood and this sacred duty of home-building, for the unnatural claims and doubtful pleasures of fashionable society; yet such wives we are assured there are, and not a few. In the larger towns and cities—the so-called centres of civilization—it is said that, with many society-ladies, motherhood is dreaded as a curse and prevented by crime. Undoubtedly, so far as they are concerned, the sin brings its own punishment, and the punishment is sufficiently severe. It makes no difference, that they are for the present unconscious and dreadless of that harvest of woe whose seeds their jeweled hands are sowing every day. It will come soon and fast enough. In broken health and blighted life—in loneliness and lovelessness—they will realize, at last, that they are reaping as they have sown. But the crime against society—the sin against government and race—the infidelity to marriage vows and obligations—the putting out of the light of a home—the blighting of human possibilities of greatness and worth—the destruction of a factor in the purity of society and the strength of a state, what personal suffering of the wretched criminal can atone for this? During an eternity of misery—could she suffer it—this sin would grow blacker by all the smoke of her torment, and greater with every groan of her anguish. The sufferings of the sinner cannot undo the sin; albeit, it is ordained, by the organic law of our being, that the sinner shall suffer. We see, however, still more distinctly, by the lurid light of such a crime against nature and society, how essential is that second condition of home, which we have named as the relation of parents and children.

HOME AN ABIDING PLACE.

Another of those essential constituents of home whose importance it would be difficult to exaggerate, is a dwelling-place. This, if possible, should be the inalienable possession of its occupants. Let it be altered, improved, amended, if they will and can, but never, save under the stress of urgent necessity, abandoned. The local attachments of our nature are strong and ineradicable. The popular proverb, "A rolling stone gathers no moss," is fairly appli-

cable not alone to material possessions, but to those higher acquisitions which enrich the understanding and the heart. These are rubbed away and lost by the sharp attritions of local change, until one becomes a mere human boulder, the mechanical result of the circumstances which have swept, tossed, and washed him hither and thither, and left him lying helpless and supine, at the mercy of every elemental and impulsive force. The steady and unchanged homestead, on the other hand, is the soil in which the dwellers are infixed like the strong rocks, which laugh at the storms of life, and successfully resist all violent and injurious change.

HALLOWED BY ASSOCIATIONS.

In process of time, there are transferred to such a spot and made a part of it, innumerable associations, joyful or sad, but all alike tender and endearing. The graves of forefathers and mothers, the home-coming of brides, the departure of sons and daughters, the birth and death of children—all have left their traces on house and furniture and soil. These dumb, material things are eloquent of all the interests and emotions of the home circle. They bind its members to the spot, or force them, if they wander,

"To drag, with every step, a lengthening chain."

Years afterward, indeed, when the family is extinct or scattered; when the fences are fallen down, the hearth-stone cold and the house a battered ruin; the footstep of a lonely stranger, treading there, is repelled by unseen forces, and something says,

"As plain as whisper in the ear,
The place is haunted."

Haunted, indeed and forever, it is, by the undying ghosts of the passionate hearts that once dwelt and revelled there.

So strong, so enduring, so imperishable is the influence of a dwelling place. No doubt, some cannot have it. It is out of their power to purchase and own their own dwellings. The necessity of their pecuniary circumstances or local surroundings forces them to rent and occupy, on such terms as they may, the hired tenements of others. This is especially true of the working classes in the cities. But even they may shun, as much as possible, removals from house to house. They may select a modest dwelling, at a price so distantly removed from the outer margin of their means as to promise permanence of occupancy if they so choose, and stay there; and this will prove, in time, a tolerable substitute for ownership. Gradually, the place will grow warm and dear to them. Should their pecuniary circumstances solidly improve, then, instead of seeking another and more eligible situation, let them take a long lease of the one they now occupy, and proceed to renovate it in accordance with their better tastes and larger abilities. This will give them that fixedness of abode which is essential to home, and which no money expended elsewhere can purchase.

THE SPURIOUS HOME.

But a worse practice than that of frequent removals seems to be steadily gaining ground in the towns and cities; and that is, the custom of family-boarding. This, it is urged, is both convenient and cheap. The wife has more leisure for society, and the husband more time and money for business and pleasure. Neither is worried or hindered by the annoyances of housekeeping. All this may be true; though we doubt about the economy, from what seems to us the sufficiently significant fact, that poor families cannot afford to board. They make a home for themselves because they must. It would seem, then, that families board not because they cannot afford to keep house, but because they cannot afford to do so in a certain style which they deem essential to their social standing. If they could go to a grand and splendidly appointed house, they would all go to morrow, and we should hear no more of the conveniences of boarding. Then, it is to this false and tyrannical god of Social Appearances that they sacrifice their comfort, their privacy and their home; for in boarding they can have none of these. They cannot choose their own table, their own hours, their own company, or their own entrances and exits. They must go in and out, up and down, at the beck and call of others. Their children must be deprived of their natural liberty, of all wholesome discipline, and exposed to the baneful influence and injurious caprices of strangers. Above all, they must be homeless; for a boarding-house is not, and cannot be made a home for any one—not even for its keepers. And to compensate for all this they have two priceless privileges: The luxury of being considered respectable, and the liberty of grumbling; and it must be confessed that they exercise the last so constantly that, one would think, it must be inexpressibly dear to them. If its exercise, however, can compensate them for the ruin of two homes—their own and that of the family with whom they board—we must say, that they richly deserve that curse of homelessness which they suffer and inflict. However, should they be forced by kind adversity to abandon the boarding-house, though for the poorest tenement in all their knowledge, they will learn at last, with grateful and happy hearts, how much truth lives in the immortal line,

“Be it ever so humble, there’s no place like home.”

MORAL ASPECTS OF HOME.

No consideration of what is involved in the subject of home would be complete without some allusion to its moral aspects, and the mutual relations of those who constitute the household. Home is something more than the mere dwelling place, set apart for the physical comfort and convenience of its inmates, and without the presence of its higher attributes, and the realization of its moral duties and responsibilities, it is incomplete, if it be not the mere

empty semblance of what the home should be. The complete home embraces within it limits a perfect system of social government, and it is in these integers of the aggregate community that there is to be found the highest guarantee of the stability of the whole social fabric of the state. It is not only the temple of domestic virtue, but it is the school in which men and women are qualified for their ulterior duties of citizenship. Here in youth are learned the principles of obedience to constituted authority, which in manhood are carried into the wider sphere of social duties. Here the edifice of character is founded; the moral stature trained to grow apace with physical and intellectual development, and the impress given which stamps its seal of expanding influence upon the future life, and its ever broadening associations.

Domestic Discipline—Nothing is more absolutely essential both to the future well-being of children and to the proper harmony of the household than that the youth should be thoroughly trained in the habits of obedience, and taught to honor and respect the parental authority. Filial respect is the surest foundation of an upright character, and it is the chief guarantee of the parents for the realization of the rewards to which they look forward for the care and labor expended upon the infancy and youth of children. Yet in no respect are parents as a rule more careless than in this. The true foundation of filial obedience is affection, which makes the duty a pleasure, and renders its performance doubly grateful to both parent and child. In order to insure the proper cultivation of this trait, the habit should be carefully inculcated from the earliest dawn of intelligence, until it becomes by custom a part of the nature of the child and is crystallized into character in the development of youth. Too commonly carelessness and indifference on the part of parents allow the child to drift without guidance in this respect, until they find themselves confronted with a hardened will set up in opposition to the demands of duty. True, the parental authority may then be asserted; obedience may still be enforced; but then a charm in the household is broken which can never be restored, a chord of harmony severed whose music will never again vibrate in the heart of parent or child, and one of the sweetest of domestic pleasures will have been banished from the family hearth. That obedience of children which is founded from earliest infancy on love and respect, will blossom perennially in the hearts of both parents and children, and shed enduring fragrance upon every relation of life.

The Sense of Honor—It may be assumed that all parents, in discharging the solemn responsibility of forming the character of those whom they have brought into being, and whom they are called upon to equip physically, mentally and morally for the vicissitudes of life, will take care that the character of the youth is founded in honesty, industry, sobriety, integrity, fidelity, economy, perseverance and self-reliant determination, which are the weapons in the armory of character by which success is to be wrested from

all conditions. But too little attention is often paid to the true ground upon which these qualifications should be based. Youth should be taught in the lessons of the domestic hearth, both by precept and example, that it is not only necessary and desirable that honesty, integrity and industry are to be cultivated because they are essential to material success, but in a better and higher sense, because they bring even greater rewards in the moral duty of performance, and the consciousness of its upright discharge which is the true measure of self-respect. Character which is to be a blessing to its possessor and to all its associations, should be early grounded in what Burke describes as that "Chastity of honor which feels a stain like a wound." This is the highest safeguard of moral uprightness, and the surest shield against the temptations of life.

Sympathy—There ought to be few higher pleasures in life than the companionship of our children, whether it be in the prattling innocence of childhood, the buoyant exuberance of expanding youth, or the glowing anticipations of approaching maturity. The parent who can find no congenial companionship in his child; who cannot enter into its feelings, pleasures and aspirations with ready sympathy, may depend that he lacks something which is essential to his best realization of domestic happiness. Too often this is the result of the unhealthy habit of exclusive devotion to the absorbing cares of business, which robs so many of our people of the full enjoyments of the best rewards of life. Companionship, even *camaraderie* of parents and children is a mutual benefit as well as a mutual pleasure. It is a healthy and wholesome relaxation to the parent; it brings mental improvement and moral dignity to the youth, and it is the easiest road to the establishment of that perfect confidence, which should always characterize their mutual relations, and is essential to their mutual welfare.

Influence of Example—Among the influences which surround the home, none is more powerful in moulding the character of children and so impressing every aspect of the domestic relations, than the force of example in the various duties of life by the parent. How can parents expect or hope that their children will grow up in cleanliness of mind, manners and morals, no matter how assiduously the principles of rectitude are taught, who dishonor by their own practices the precepts they seek to impress upon the young? The power of example is stronger than the force of preaching. The very confidence and respect which children have by intuition for parents, adds redoubled force to the strength of pernicious example. You may teach a child that a habit is pernicious, but if you do not apply that rule to your own conduct, he will follow your example, and regard your advice as an abstract theory which it is not necessary to practice. If you desire your son to grow up to honorable manhood, be punctiliously honorable with him, even in the smallest things and from earliest childhood; see that your

language and habits are cleansed from every taint from which you would guard his innocence; see that your passions are kept under control, and that your own dignity and self-respect are always maintained, and you will find not only the pleasure which you seek in the development of his character, but an added reward in the improvement of your own.

Home and Health—The laws of health make an imperative demand for ample seasons of recreation and relaxation from the continuous strain of the labors of existence and the cares of business. In no other place can pleasure and relaxation be found of as elevating and healthful a nature as among the pure and wholesome influences of home, in the loving society of wife and children. And yet to how great an extent are they neglected in the high-pressure rate of modern American life, depriving both the heads of families and their dependents of their best and most pleasurable associations, of their purest enjoyments, and of the best stimulus for renewed encounter with the cares of life. Even where those salutary influences are not neglected for doubtful if not injurious pleasures, it is too much the custom to bring the shop or the counting-house into the home. There is a lesson which might be learned with advantage by thousands of business men in the following extract from an article on this subject, in the *Golden Key*, by Mr. I. Harley Brock:

“If there be a fault to be found with the progressive, vigorous, energetic mode of life which is distinctively American, the characteristic of the healthy vitality of our people and their institutions, it is the tendency, too often developed, to allow the mind to become wholly engrossed in the care of business to the neglect of that large fund of resources for the higher enjoyment of domestic and social life, which every man with a sound mind in a healthy body inherently possesses. And this, when it does occur, invariably encroaches upon that period of life in which the capacity for rational enjoyment and wholesome pleasures is in its most vigorous stage. It is the too common mistake of the man of business to put off for the future day, when he shall have reached the affluence at which he aims, the exercise of that faculty of enjoyment which he robs of its present gratification with a promise to pay in the indefinite future, in order that he may redouble his attention to business pursuits. This is doubly a mistake, in that the future may never be reached; and if it be, then may be found that the time has gone by; that the capacity has perished in its neglect; that it is impossible to rekindle the fires of youth in the ashes of old age, and that when once resolved to devote the remnant of life to the pursuit of pleasure fairly won by arduous toil, there remains only the desire without the realization—able to ‘climb Elysium, but to lack its joy.’ He who keeps life well balanced, neither evading its duties nor refusing its passing rewards, will find in the end that he has made as

satisfactory progress in worldly prosperity, and has lived a better and brighter life."

EDUCATION OF CHILDREN.

Among the chief of the duties and responsibilities of the heads of the Home, that which embraces the education of children is paramount in importance, and ought to be the subject of earnest and anxious forethought, and of unremitting and watchful care. The object of all parents ought to be, and is, except where unnatural and abnormal conditions exist, to bend the utmost energies and to strain every available resource to so equip the youth or maiden for their future life, as to best insure their happiness and prosperity. To this end, therefore, it is primarily of importance that youth should be endowed with a sound mind in a sound body—*mens sana in corpore sano*; and this embraces as well the health of the morals, for all experience goes to show that there can never be perfect or lasting physical and intellectual vigor without moral health. These three graces of manhood and womanhood go hand in hand through life; whenever one is absent, the others are certain to languish and decay. It is unfortunately the great defect of American domestic education that the moral side of life is not regarded, as it ought to be, as strictly essential to and belonging to the duty of physical and mental education. Perhaps no people in the world are so lavishly liberal in their treatment of the youth as are the people of America. The great masses of our citizens, having to carve their own fortunes out of their capital of industry and energy, find always the gratification of a laudable ambition which had been denied to themselves, in the effort to improve the social, intellectual and material fortunes of their children. The clerk or mechanic, forced by the hard exigencies of his early circumstances to forego many of the graces, refinements and luxuries of life, now that thrift and energy have made him the master of ample competence, finds peculiar pride and pleasure in taking care that his children experience none of the privations which he so well knows how to appreciate. The mother who in the springtide of her own existence was compelled to self-denial, is prone to take a lavish satisfaction, in indulgence in dress and social pleasures to her daughters. In both cases the instinct is natural and laudable; but it also contains the element of the very greatest danger to which children so situated are exposed in their education. Such indulgence is too apt to lead to pride of person, of position, and of purse, which warp and pervert the noblest, highest and most generous instincts of manhood and womanhood, and expose those so educated in false kindness, to the ever present risk of being stranded upon the shoals of utter helplessness by the first unexpected tempest of adversity. If the father, while denying no wholesome luxury or refinement of life to his son, were also to ground him upon those solid virtues of self-denial which he in his

youth practiced from necessity; and if the mother without casting any shade upon the sunny youth of her daughters, were to teach them for their pleasure what it had been her task to practice in youth, the homely but substantial accomplishments of housewifery, these sons and daughters would achieve happier lives for themselves, and would escape many a trap and pitfall which the whirligig of time, in its eccentric and uncertain course, may bring them into contact with. Every son of wealth should learn a trade or calling; every daughter of affluence should graduate as a housewife. To affect to sneer at wealth is both absurd and vulgar, for in general its enjoyment implies the possession of some of the most worthy virtues; but the young should be taught this lesson, without which their education will never fit them for the highest and best achievements of life, viz.: that moral worth, not material wealth, makes up the highest dignity of manhood and womanhood; that well-earned self-respect is the highest reward any man can compass; that whoever possesses these, whether mechanic or millionaire, meet upon a common plane, and that upon the highest and best level of existence that human life can achieve.

Good Manners—While care is taken in the education of the young, that the development of physical perfection is accompanied by the healthy progress of mind and morals, what are called "good manners" must not be lost sight of. To paraphrase the catechism these are "the outward and visible sign of an inward and spiritual grace." They constitute the manifest expression of mental and moral health—not the expression of profession, but the spontaneous effusion of a well-constituted character. They are the blossoms which bloom upon the tree of worth and goodness, instinct with the fragrance of every virtue from which they seek the springs of existence. Good manners do not mean the mechanical observance of social formalities, the cold and unsympathetic routine of propriety. Courtesy of speech and manner, even if it be only following the adjunct to "assume a virtue if you have it not," is always pleasing and agreeable; but that is as "the tinkling cymbal," when compared with the grateful music which is awakened in the chords of a good heart by the impulses of an upright mind. Good manners, so considered, are the stamp which attests the unalloyed gold of a sweet and harmonious disposition, and no base or spurious counterfeit, however perfect the imitation or however bright and plausible the resemblance, can ever seek to rival its perfection. It should be the constant care of parents to teach the young that the courtesies of life are something real, and not a mere hollow form; and in training them in their conventional modes of expression, to gift the youth with those graces of character which shine out in good manners—deference and obedience to elders and superiors, respectful homage to the aged, chivalrous protection for the weak and feeble, sympathy with the unfortunate and even with the erring, and pleasure in adding to the happiness of others. These constitute true

politeness, and their exercise is not only a principal charm of life for their possessor and those on whom they are reflected, but they are also a powerful influence in the promotion of the material welfare.

Care of the Person—When it was written that “cleanliness is next to godliness,”—whether it was meant to imply mere bodily cleanliness, or as well purity of the mind, the manners and the morals—there was a good deal more philosophy conveyed in the proverb than is expressed. The bath of the Mohammedan is a part of his religion, and strict cleanliness was one of the most rigid injunctions of the Mosaic law. It would be an inestimable boon to the physical welfare of modern Christian countries if this virtue of the Eastern infidels could be but made a part of the ordinary religious obligation. Scrupulous cleanliness of the person is something that one not only owes to himself and to his neighbors, but it is, as well, one of the most substantial comforts and grateful luxuries at our command, while the return in physical benefit which it confers ought to be in itself a sufficient incitement to its systematic cultivation. It is greatly to be feared that this is the point of all others where physical education in America is lacking, and that while, in a sense, personal vanity compels the preservation of a presentable surface, the fair exterior which our average citizen of either sex presents is but the whitening of the sepulchre. “Shall I wash for a high neck dress or a low neck dress, mother?” is a current witticism which points at what we must fear is, to a large extent, a palpable truth. How many hundreds out of every thousand go from month to month, without any other purification than the hand-basin affords, and yet would be unanimously indignant if the whisper “unclean” were ever so gently to assail them? In how many thousands of houses do we find the piano, but not the bath-room? And yet people consider themselves refined and cleanly, and have no conception of the horror and disgust with which they would regard the revelations which a Turkish bath might make for them!

The care of the person ought to be made a very essential part of the education which belongs to Health and Home, and strict habits in this regard should be scrupulously cultivated. The bath to even the youngest child should be graduated into a habit and cultivated into a luxury. As children grow older they should be taught the most punctilious and exact habits for the care of the person, and with particular regard to the hair, the teeth, the nails, and the hands and feet; not on the ground of vanity, or even of health necessarily, but as a matter of self-respect. These habits of the body will be conveyed again to the apparel, for the youth or maiden who has been trained to fastidious cleanliness of the person will not be able to endure contact with soiled linen, unpolished boots, frayed gloves or an ill-conditioned or untidily kept hat. The care of the person has these claims to our regard: It is essential to personal comfort; it is inseparable from personal dignity and self-

respect; when cultivated, it is transformed from a duty into a wholesome and grateful luxury; and it brings a more abundant return in the store it adds to the blessings of health, than anything else within our power to compass. And moreover, it is the one luxury that is within the reach of all, and for neglect of which no one can excuse himself to himself.

Companionships—In the modern system of education, it has been found that in forming the mind and directing the intelligence of the young and impressionable, there is no mode of teaching so effective as that of object lessons. As a matter of fact, until the character has fully matured and during the whole period of the greatest susceptibility and impressibility, the whole life of youth is a series of practical object lessons. Those which he encounters in the Home, we must assume to be of the healthiest and most elevating tendency; but the prudent parent will look well and watchfully to the external influences to which their children are subjected. The most potent of these is that of companionship, and in this regard too great care cannot be taken that the associations are clean and wholesome. The solicitude of the parent, however, in this regard must be governed by discretion and judicious supervision. Too frequently it is the case, either through carelessness or unintentional neglect, arising from absorption in the cares of business, that the young are allowed to drift into unprofitable companionship, and when this is perceived it is sought to remedy it by restraint. Almost inevitably this results in re-action and serves to intensify the danger. The best and most effective way is to so thoroughly imbue the young mind with the pride of probity, and the sense of honor, that contact with anything vicious or immoral arouses a sense of repugnance and antagonism which is a certain safeguard against contamination; and youth should at the same time be led to the understanding that that which is simply idle and frivolous, though apparently harmless, is the bridge by which the positively vicious and immoral is reached. This is essentially true of the influence of books. Indeed, it may be believed that the companionship of books has a more direct, absorbing and positive influence than that of the social surroundings; and this is eminently and emphatically true of youths of studious or sensitive disposition. Too careful supervision cannot therefore be exercised over what the child is allowed to read. The fecundity of the printing press in these days has let loose upon society an overwhelming flood of idle, frivolous, vicious, utterly unprofitable and to a large degree prurient and immoral literature, if it can be dignified by the name, which is a constant menace to the mental and moral health of the young. It is a mistake, however, not to allow the mind of the youth a sufficient pabulum of wholesome literary recreation. Wholesale and unreasonable condemnation of reading for pleasure is almost certain to drive the young to dangerous indulgence in secret. Rather choose for him a fair allowance of clean and wholesome books of

useful and practical knowledge, conveying profitable moral lessons, and at the same time improving his ideas upon composition and his faculty of language. Lead him to understand and realize that companionship with the dime-novel, or the vicious class of fiction, is degrading and disgraceful, and you will thus educate his taste up to a refinement in such matters which will be his surest safeguard against the evil companionship of objectionable books.

SELECTION OF OCCUPATION.

The selection of an occupation is something which more concerns the ulterior objects of the home education, than those things which strictly pertain to the cares, duties, trials and privileges of the home circle. Home is the school in which the youth has received his mental, physical and moral training, and from which he is about to graduate with the diploma of paternal approval, sealed by the devotion, love and hope of the mother whose tender solicitude watched by his cradle, and whose fondest prayers will accompany him into the future which he is to make for himself. The choice of an occupation is something which may be and should be left to the decision of him who is to put all his future at stake upon it. But his qualification to make that choice will have rested solely upon the formation of his mind, of his feelings, or of his inclinations or prejudices, which rest to a large extent, if not solely with the parental function. And in this duty of guiding the inclination or interest which every youth has as to his career, into channels which shall best promote his future welfare and happiness, there is one rule that should govern alike rich and poor, high and low, and that is, that the dignity of labor, of duty, of life with an object in it, is essential to the true happiness and well-being of every human being. The man without an occupation—be he ever so high or ever so humble, born to purple or to penury, nursed in the lap of luxury or in the hard cradle of poverty—is an anomaly in life, a waif upon the bosom of the sea of existence, helpless, hopeless, purposeless; doomed certainly to wreck, disaster and destruction, either mentally, morally, physically or financially. All experience proves that in one or other of these shapes the fate of his useless being will overtake him. Let the children of the poor be taught that in whatever sphere of labor they may elect to work out their lot, if they but bring to bear probity and perseverance, honesty and earnestness and the sense of duty, all the best prizes of life lay open to them. Let the children of the rich be taught to respect the dignity of labor and to comprehend the vicissitudes of fortune, and while qualifying themselves for a wholesome and useful life in that more favored sphere in which they have been born, acquire also some practical vocation which shall never in any emergency leave them quite without the resources of self-respecting independence.

DIVISION SIXTH.

HYGIENE.

THE DIGESTIVE ORGANS.

Statement—It is a law of the human system that each organ is moved to healthy action under the influence of its proper stimulus. The perfection of the digestive process, as well as the health of the whole system, requires the observance of certain rules, with regard to the quantity and quality of the food, the manner of taking it and the condition of the system at the time.

QUANTITY OF FOOD.

Variation—The age, occupation, temperament, temperature, habits, amount of clothing generally worn, health and disease of the individual are among the circumstances which produce a variation in the quantity of the food necessary for the system.

Growth—In proportion to this will be the natural demand for food on the part of the child and youth. The more rapid the growth the greater the demand. This makes the keen appetite and vigorous digestion of childhood. After full growth this unusual necessity for nutriment ceases, unless there should be a corresponding increase of mental or bodily exertion after this period. Without this, to continue to eat as much as during the growing stage would impair or disease the digestive apparatus and diminish the vigor of the whole system.

Repairing Waste—Loss of substance follows action in every department of nature; this is called waste. As exercise or thought increases, the fluids of the system circulate with increased energy; the old atoms of the human system are more rapidly removed by their proper organs, the vessels of the skin, lungs, kidneys, etc., and new atoms are deposited by the smaller bloodvessels.

Diminishing the Quantity—A lessening of activity implies a corresponding cessation of waste; hence, the quantity of food should be diminished in nearly the same proportion as the amount and intensity of exertion, otherwise the tone of the digestive organs must become impaired and the health enfeebled. Students who have left laborious employments to attend school, are exhausted by the demands of the new labor rather than by previous habits. The real wants of the system are generally manifested by the corresponding sensation of hunger. It is a common observation,

in academies and colleges, that the students who suffer from impaired digestion are those who have experienced this transition from labor to comparative repose.

Heat—This is produced in the system, at least partly, by the union of oxygen with carbon and hydrogen, in the minute vessels of the various organs. This union is accomplished by food and drink. The volume of heat is greatest when it is most required, *i. e.*, in cold weather. Every one has noticed that he eats with better appetite in winter than in summer. Where any deficiency of food occurs a corresponding increase of clothing is required. The principle shows the propriety of lessening the amount of food as the warm season approaches. If this were regularly practiced the tone of the stomach would not so often need restoration by means of “tonic bitters,” etc. Men minister to the lower animals more wisely than to themselves; thus all who have the care of live-stock soon learn by experience that when the warm season begins their charges require less food.

Quantity to be Gauged by Condition—If the digestive organs are weakened or diseased, that amount of food only should be taken which they can easily digest. Unchanged by digestion, food weakens rather than invigorates the system. The anxiety of a mother should never induce her to give food to her sick child, unless she believe it to be actually needed. If she be in doubt, let her consult a physician.

Habit—This has much to do with the quantity of food required. Some take more than is necessary and the excess is removed by the waste outlets. If then food is not taken in the usual quantity, there will be a feeling of emptiness, resembling hunger, from the want of the usual distention of the stomach. This feeling may result from disease, but it is oftener the effect of inordinate indulgence in eating.

Effect of too Much Food—Large quantities oppress the stomach and produce languor of the whole system. The system makes an extraordinary demand for blood and nervous fluid, to enable the stomach to dispose of its burden. If an unusual effort is intended, either mental or physical, soon after meal-time, we should eat less than usual rather than more.

Appetite and Taste—Satisfaction of the appetite is the best usual test of the right quantity of food. This is the natural desire, arising from the wants of the system. Taste, on the other hand, is an artificial desire to gratify the palate.

No Certain Rule—Though many things may aid us in fixing the right quantity of food, there is no certain guide. Some think that hunger may be relied upon for this purpose; but this is evidently an error, since an artificial appetite may be induced by stimulants or gormandizing. So, on the other hand, the brain, when diseased, may not take cognizance of the sensations of the stomach, though the system may actually require nourishment.

Disease, habit, the mental state and many other things exert an influence on the state of the appetite.

It is true that Dr. Beaumont noticed, in his experiments upon Alexis St. Martin, that after a certain amount of food had been converted into chyme the gastric juice ceased to ooze from the coats of the stomach, and it has consequently been inferred by some medical writers that the glands which supply this juice would only supply enough for the actual wants of the system. But what are the reasonable grounds of this inference? Can any one show a reason why the gastric glands may not be stimulated to extra activity or be influenced by habit as well as other organs?

It is admitted that the predisposing cause of hunger is usually a demand of the system for nutrient material; but it is also insisted that this is not always the immediate cause of the sensation of hunger. Some physicians ascribe it to certain conditions of the glands of the stomach, and others to a peculiar state of the nervous system.

QUALITY OF FOOD.

Generalities—The kind of food best adapted to the wants of the system is modified by many circumstances. The different varieties of food are still further modified by the various methods of preparation. A given quality of food is not equally well adapted to different individuals, or to the same individual in different conditions. This must be obvious to all who have even slightly observed the effect of the same food, at different times, upon themselves.

What is Meant by Quality in Food—Food is either nutritive or digestible, but a single article is not necessarily both. Foods are nutritious in proportion as they supply the elements of chyle, but they are digestible only in proportion to the readiness with which they yield to the action of the gastric juice. These properties should not be confounded. Such articles as milk and eggs which contain the greatest amount of the constituent elements of the system are most nutritious, but there are conditions of the system in which these are wholly indigestible. Of course those articles which do not contain the essential elements of the system should never form the exclusive diet. On the other hand it is plain that articles which contain but a small quantity of these elements may often afford the greatest amount of nourishment because they are more easily digested.

Time of Digestion—To ascertain the time required for the digestion of the different articles of food, Dr. Beaumont made many experiments on Alexis St. Martin, the general results of which are shown in the following table. As is known to almost every one, the stomach of St. Martin was ruptured by the bursting of a gun. He recovered under Dr. Beaumont's care, when the stomach adhered to the side, with an external opening. In the healing process

nature formed a kind of a valve which closed the opening from the inside, thus preventing loss of the contents of the stomach, but on pushing aside this valve, the process of digestion could be plainly seen. It was through this orifice that the appearance of the coats of the stomach and food at different stages of digestion were examined.

TABLE,

SHOWING THE MEAN TIME OF DIGESTION OF THE DIFFERENT ARTICLES OF DIET.

Articles.	Preparation.	Time.	Articles.	Preparation.	Time.
		h.m.			h.m.
Apples, sour, hard.....	Raw.....	2 50	Meat hashed with	} Warm'd 2 30	
“ “ mellow.....	Raw.....	2	vegetables.....		
“ “ sweet, do.....	Raw.....	1 30	Milk.....	Boiled.....	2
Bass, striped, fresh.....	Broiled.....	3	“.....	Raw.....	2 15
Beans, pod.....	Boiled.....	2 30	Mutton, fresh.....	Roasted.....	3 15
Beef, fresh, lean, rare.....	Roasted.....	3	“ “.....	Broiled.....	3
“ “ “ dry.....	Roasted.....	3 30	“ “.....	Boiled.....	3
“ steak.....	Broiled.....	3	Oysters, fresh.....	Raw.....	2 55
“ with salt only.....	Boiled.....	3 36	“ “.....	Roasted.....	3 15
“ with mustard.....	Boiled.....	3 10	“ “.....	Stewed.....	3 30
“ fresh, lean.....	Fried.....	4	Parsnips.....	Boiled.....	2 30
“ old, hard, salted.....	Boiled.....	4 15	Pig, sucking.....	Roasted.....	2 30
Beets.....	Boiled.....	3 45	Pigs' feet, soused.....	Boiled.....	1
Bread, wheat, fresh.....	Baked.....	3 30	Pork, fat and lean.....	Roasted.....	5 15
“ corn.....	Baked.....	3 15	“ recently salted.....	Boiled.....	4 30
Butter.....	Melted.....	3 30	“ “ “.....	Fried.....	4 15
Cabbage head.....	Raw.....	2 30	“ “ “.....	Broiled.....	3 15
“ with vinegar.....	Raw.....	2	“ “ “.....	Raw.....	3
“.....	Boiled.....	4 30	“ steak.....	Broiled.....	3 15
Cake, sponge.....	Baked.....	2 30	Potatoes, Irish.....	Boiled.....	3 30
Carrot, orange.....	Boiled.....	3 15	“ “.....	Baked.....	2 30
Catfish.....	Fried.....	3 30	Rice.....	Boiled.....	1
Cheese, old, strong.....	Raw.....	3 30	Sago.....	Boiled.....	1 45
Chicken, full-grown.....	Fricas'd.....	2 45	Salmon, salted.....	Boiled.....	4
Codfish, cured, dry.....	Boiled.....	2	Sausage, fresh.....	Broiled.....	3 20
Corn, green, and beans.....	Boiled.....	3 45	Soup, beef, vegetables } and bread.....	Boiled.....	4
“ bread.....	Baked.....	3 15	“ chicken.....	Boiled.....	3
“ cake.....	Baked.....	3	“ mutton.....	Boiled.....	3 30
Custard.....	Baked.....	2 45	“ oyster.....	Boiled.....	3 30
Dumpling, apple.....	Boiled.....	3	Suet, beef, fresh.....	Boiled.....	5 30
Ducks, domesticated.....	Roasted.....	4	“ mutton.....	Boiled.....	4 30
“ wild.....	Roasted.....	4 30	Tapioca.....	Boiled.....	2
Eggs, fresh.....	} Boiled hard..... soft.....	3 30	Tripe, soused.....	Boiled.....	1
“ “.....			Trout, salmon, fresh.....	Boiled.....	1 30
“ “.....			“ “.....	Fried.....	1 30
“ “.....	Fried.....	3 30	Turkey, domesticated.....	Roasted.....	2 30
“ “.....	Raw.....	2	“.....	Boiled.....	2 25
Flounder, fresh.....	Fried.....	3 30	“ wild.....	Roasted.....	2 18
Fowl, domestic.....	Boiled.....	4	Turnips, flat.....	Boiled.....	3 30
“ “.....	Roasted.....	4	Veal, fresh.....	Broiled.....	4
Goose.....	Roasted.....	2 30	“ “.....	Fried.....	4 30
Lamb, fresh.....	Broiled.....	2 30	Venison steak.....	Broiled.....	1 35
Liver, beef's, fresh.....	Broiled.....	2			

Kind of Food Required—If we eat only those articles most easily digested the digestive powers will be weakened for want of exercise; while if we pursue the opposite course they will be exhausted by overwork. The kind and amount of food should therefore be adapted to the maintenance of the digestive powers when in health and to their gradual invigoration when debilitated. However, the most easily digested food is not always best for a person recovering from sickness, because if it passes too readily through the digestive process it may bring on a relapse into the original disease. Thus water-gruel is often better for a convalescent than beef-tea and fish, though the latter are more easily digested.

Animal or Vegetable Food—It is not yet well settled which of these is better adapted to nourish man. The people of the torrid zone subsist chiefly on vegetables, and a large proportion of these are fruits; while those of the frigid zone live principally on fish and flesh. There is little doubt that in this both obey the condition of health peculiar to either climate; though in the latter very little choice is possible. It would seem to follow then that a mixed diet of animal and vegetable food, the proportion of either varying with the latitude, is best for the inhabitants of more temperate zones. The form and arrangement of the human teeth, as well as the structure of the stomach and intestines, would perhaps lead us to conclude that a mixture of animal and vegetable food is on the whole best for all, wherever they may happen to live.

Adaptation of Food—The distensible character of the stomach and alimentary canal should determine this. While the human stomach will be full if it contain but a gill, it may be so distended as to hold a quart, or even more. The intestines also are extremely distensible. Now, if this distensible quality is unused, as it must be if only nutritious food is used, they become at last incapable and diseased. The digestive organs absolutely require the stimulus of distension and friction caused by the passage through them of a considerable quantity of wholly innutritious material. This is the reason unbolted flours are so generally prescribed for dyspeptics; and, as it is quite evident that the natural tendency of sedentary habits is in this direction, enfeebling the appetite and the whole digestive apparatus, persons so employed ought to be particularly careful on this point.

Any one in whom there appears a tendency to either diarrhea or constipation may generally so apply this principle as to check the tendency and be restored to health without other aid. In diarrhea the food should contain a very small proportion of waste or innutritious matter, while in constipation the proportion of waste should be as large as practicable.

Season and Climate—These should always be considered in the selection of food. In cold weather, food of a highly stimulating character may be used almost with impunity by persons to

whom such food would be very injurious, and even highly dangerous, if used in a milder temperature. The proportion of animal to vegetable food, therefore, should be greater in the winter and smaller in the summer.

Age of the Eater—Every one understands that the digestive organs of a young child are much more delicate and sensitive than those of an adult, and that they cannot therefore bear the same strong and rough food. This is true also of a very aged person, who seems in body as in mind to experience a second childhood. A nutritious, unstimulating, vegetable diet, as soon as warm weather sets in, is very important to those whose digestive organs are highly impressible or diseased.

Modifying Habits—This influence is very powerful. The custom makes the man. If one who has been used to a vegetable diet change suddenly to animal food, or *vice versa*, the whole system receives a shock, and disease is likely to follow, especially of the digestive organs. If a change in the manner of living is necessary, it should be brought about very gradually. Even a change from a bad to a good habit may be too sudden and violent.

Food and Temperament—It is obvious that a food quite proper for one temperament would be entirely too stimulating for another, and the reverse of this is also true; that is, it might be too little stimulating for another. People of dull sensations and slow movements, as a rule, will be benefited by a large proportion of animal food; while quick, susceptible and nervous persons require a nutritious and unstimulating vegetable diet.

MANNER OF TAKING FOOD.

This is of very great practical importance, as the health of the digestive organs very largely depends upon it; and this a thing so fixed and certain that circumstances need hardly ever modify it.

Regularity of Eating—The character of the food, and the age, health, exercise and habits of the individual, should determine the intervals between meals. Every one will understand that the digestive process is much more rapid and energetic in the young, active and vigorous than in the aged, indolent and feeble, and food must, in consequence, be taken more frequently by the former than by the latter. Food may be digested in one hour in a young and vigorous person, which would require four or five hours in others. However, the average time of digestion will be from two to four hours, and the stomach will require from one to three hours to recruit its exhausted powers after the labor of digesting a meal, before it is well prepared to enter upon a new task of the same kind.

Not too Frequent—The secretion of gastric juice will be insufficient, and the contraction of the muscular fibres too feeble and

imperfect, rightly to perform the work of digestion if food is again taken before the stomach has had time to regain its tone and energy. If taken before the work of digesting the previous meal has been completed, the effects will be still worse, because the partially digested food becomes mixed with that last taken, and the stomach is burdened with the whole mass, which has become at once too large for its already fatigued and exhausted forces. The intervals between meals should therefore be long enough for the whole quantity to be digested, and for a sufficient period of repose of the exhausted organs. The importance of these suggestions increases in proportion to the feebleness of the person and the debility of the stomach. They should be regarded especially in the feeding of infants and older children. Persons recovering from severe illness should pay special heed to them if they wish to regain flesh and strength rapidly. The rapidity of the digestive process, other things being equal, is in proportion to the habitual activity of the life, and persons of sedentary habits are therefore more liable to eat too often than others of more busy and stirring pursuits, and the consequences with the former are worse.

Mastication—This should be as nearly complete as possible; that is, all solid articles of food should be reduced to a state of comparative fineness by chewing before they are swallowed. The gastric fluid will then mix with it more readily, and act more vigorously in reducing it to chyme. "Bolting," that is swallowing food slightly masticated, tends to derange the digestive apparatus and impair the nutritive powers.

Motion of the Jaws—This should be slow rather than quick, so that the salivary glands may have time to secrete a sufficient quantity of saliva to moisten the food. If the food is swallowed unmoistened by saliva the digestion is retarded; besides in rapid eating more food is taken than the system demands, or than can be easily digested. Laborers and business men, as well as people of more leisure, should have ample time for taking their meals. Imperfect mastication is a potent cause of dyspepsia.

No Drinking at Meals—The use of tea, coffee, water or any other fluid, is not required by nature's laws while taking a meal, because the salivary glands are intended to supply fluid to moisten the solid food. "Washing down" the food with drink instead of slowly moistening it with saliva, tends to produce disease not only in the salivary organs by leaving them in a state of comparative inactivity, but in the stomach also by the deficiency of the salivary stimulus. Besides, large quantities of fluids used as drinks unnaturally distend the stomach and lessen the energy of the gastric juice by diluting it. These drinks when taken into the stomach must be removed by absorption before the digestion of the food can be even commenced. Drinks should never be placed on the table until the solid food is eaten. The horse will never voluntarily leave his provender nor the ox his hay, to wash it down. If we would be

as healthy as these animals, we should be as natural in our habits of taking food. Drinking largely at meals is a mere habit, and a most unnatural and unhealthy one.

Thirst—This sensation does not always arise from the demand for fluids to increase the water of the blood, as in desire for drink which accompanies free perspiration; in this case, water or some other drink is absolutely necessary; but it often results from fever or local disease of the parts connected with the throat. In these instances thirst may be allayed by chewing some hard substance, such as a dry cracker. This excites a secretion from the salivary glands which removes the sensation. In thirst, from a heated condition of the system, this practice affords relief and is safe, while the practice of drinking large quantities of cold fluids is unsafe, and should never be indulged.

Hot Food and Drink—It should not be taken very hot. When this is done, the vessels of the mucous membrane of the gums, mouth and stomach are unduly stimulated for a short time; this is followed by a loss of tone and by debility of these parts. The practice is a fruitful cause of spongy gums, decayed teeth, sore mouth and indigestion. But neither should it be taken very cold. If a considerable quantity of very cold food or liquid be taken into the stomach, the tone of the system will be impaired and the health endangered by the sudden abstraction of heat from the coats of the stomach and surrounding organs, to impart warmth to the cold food or drink. This arrests the digestive process and the food is kept in the stomach too long and produces oppression and irritation. Food and drink warmed, rather than heated, are best suited to the natural condition of the digestive organs.

It may have been observed that the inferior animals, as well as man, are injuriously affected when a bad quality of food is taken into the stomach, or taken in an improper manner. Cows fed on unhealthy slops, as they are likely to be in cities, decay and go dry in about two years. Is the milk of these diseased animals a safe nourishment for children?

CONDITION OF THE SYSTEM.

Violent Exertion—Severe exercise of either mind or body should not be taken immediately before or after eating, because all organs when in action require and receive more blood and nervous fluid than when at rest. Of the brain, muscles and vocal organs, this is especially true; and whatever of unusual supply they receive must be taken from other parts of the system. Of course, then, the parts from which these are drawn must be correspondingly weakened. Again, after such an extraordinary local demand and supply some time must elapse before the tide can be arrested and turned to other organs, so as to re-establish the equilibrium of the

system. Severe exertion, therefore, of any kind should never be made within a period varying from thirty to sixty minutes of the time of taking a meal. This interval may be passed in cheerful amusement or conversation. The prevailing practice among all sorts of people of passing at once from severe employment to meals and from meals back to work does much to undermine the health of all the mental and physical laborers of this country.

To satisfy himself of the soundness of this theory an Englishman had two dogs fed on the same article of food, and while he permitted one of them to remain quiet, he sent the other in pursuit of game. At the expiration of an hour he had both dogs killed. The stomach of the one that had remained at rest was nearly empty, the food having been properly changed and carried into the alimentary canal; while, in the stomach of the dog that had been running, the food remained in nearly the same state in which it had been eaten. The same fact is true with man, with this difference, that his organs being more delicate he is more liable to deep and permanent injury from a similar cause. The Spanish "siesta," or after-dinner sleep, would be no bad custom to engraft upon the habits of the Anglo-Saxon race. It is true that in some instances of strong health and constitution, persons may seem to violate the law with impunity; but outraged Nature will sooner or later have her revenge. The Spanish custom might, perhaps, be substituted and improved by an hour of gentle exercise or pleasant recreation before and after meals, as these facilitate digestion and help to sweep "the cobwebs from the brain." No judicious horse-master rides or drives his animals as soon as they have swallowed their food, because he knows that this makes them dull and sluggish and tends to impair their efficiency. What a pity that he cannot be induced to treat himself as kindly.

The Passions—All have observed their influence upon the appetite. Let a man, sitting at table and beginning the enjoyment of a hearty meal, receive suddenly intelligence of the death or dangerous illness of a dear friend, or be made violently angry or unusually excited in any other way, and note the effect upon his appetite. It disappears as if by magic. This is merely because the blood and nervous fluid have been drawn away from the stomach to supply the violent demands of those other organs which were roused to action by the stimulus of passion. Let the passion be calmed and a proper interval elapse and he will turn hungrily to his meal. This shows the importance of shutting out the "shop" from the meal; of avoiding at that hour absorbing thoughts and discussions; and that every one who appears at the board should show only the lightest and sunniest phase of his temper and character.

Prostration of the Nervous System—Indigestion from this cause should receive very careful attention. The food should be simple, nutritious, moderate in quantity, and taken at regular

intervals. The nervous prostration is increased by large quantities of stimulating food taken frequently. That the brain may be excited to a natural and healthy action and so impart the needed stimulus to the digestive organs, open-air exercise should be combined with cheerful conversation.

Food before Retiring—Nothing should be eaten for at least three hours before going to bed. Unpleasant dreams or colic-pains are frequent effects of going directly to bed after a hearty meal. The reason of this is, the brain becomes partially dormant by sleep and thus fails to afford the digestive organs the requisite nervous stimulus. As a consequence the food lies undigested on the stomach, producing local oppression and irritation.

A physician of our acquaintance was called on by a famous hunter of the Virginia mountains for a prescription for nightmare—not to cure, but to cause it. His old woman, he said, complained mightily of it, but he thought she was shamming to excite sympathy. He would like to have it once, just to know what it was. The doctor directed him to go home, spend the next day in hunting, and just before going to bed at night to eat as much as he wanted of bacon and cabbage. When his rueful face next appeared in the physician's office, he said, "Doctor, I know all about it, and the old woman wasn't shamming a bit."

Small Quantities of Food—Only those should be taken of a mild, unstimulating character, when the general system is feeble and the digestive organs weak. To a half-famished man, or one recovering from dangerous illness, this rule is imperative. Too much food will then almost certainly kill. The weak stomach, after its long inaction, is as unfit for hard labor as are the muscles. Under these circumstances knowledge and prudence, rather than appetite, should direct the giving of food. It is a popular fallacy that "food never does harm when the appetite calls for it." The animal and vegetable broths are a convenient form of food in cases of great prostration, when the system needs immediate nourishment, because liquids are more rapidly removed from the stomach by absorption.

The Skin and Digestion—It is an important fact, though few people seem to know it, that the condition of the skin exerts a powerful influence on the digestive organs. The action of the stomach and its associate organs is diminished whenever free perspiration is checked, either by want of cleanliness or chills. Many liver and stomach complaints owe their origin to this cause. Many diseases of the alimentary canal, also commonly called "summer-complaints," might be prevented by attention to clothing and bathing.

Tight Clothing Impairs Digestion—The ribs are raised, and the central part of the diaphragm lowered from one to two inches at each full drawing of the breath. This depression is accompanied by a relaxation of the outer abdominal walls. When the

breath is thrown out the abdominal vessels contract, the ribs are depressed, the diaphragm relaxes, and its central parts ascend. These movements cause that raising and lowering of the stomach, liver, etc., which form the natural stimulus of these organs. Of course, these movements cannot take place freely in persons who dress tightly, and the tone and vigor of the digestive organs in those persons is consequently impaired. A confined waist will not permit a full and deep inspiration; and thus it is that tight dressing soon enfeebles and destroys the digestive functions.

Relation of Pure Air to Digestion—A keen appetite and strong digestion depend greatly on pure air. Pure blood cannot exist in the system except when we breathe a pure air, and the digestive organs need not only the stimulus of blood, but of pure blood. It has been noticed that the mouth and throat of those persons who sleep in small and badly ventilated rooms, are dry and unpleasant in the morning and they have little or no appetite, and this is the reason of it; impure blood lessens the desire for food and weakens the digestive organs. The following incidents will indicate this.

It is said of an innkeeper, in London, on no less an authority than that of Dr. Reid, in his work on the "Ventilation of Rooms," that when he spread a public dinner, he always did so in a low and ill-ventilated basement room, and that he assigned, as his reason for this, that his guests consumed only about half as much food and wine as they would have done if more pleasantly situated.

It was stated before a committee of the British Parliament, by a manufacturer, that he had taken away an arrangement for ventilating his factory, because he noticed that his hands ate much more after his mill was ventilated, and in effect that he could not afford to have them breathe pure air. The impure air of the rooms they occupy causes many of the cases of indigestion among clergymen, seamstresses, school-teachers, sedentary mechanics and factory operatives, and they may be prevented or cured by attending to ventilation.

Evacuation—This is a daily necessity for the preservation of health. There is very frequently an inactive or costive condition of the alimentary canal, in chronic diseases of the digestive organs. This may always be relieved by friction over the abdominal organs, and by making an effort, at some stated period of each day (evening is best), to evacuate the residuum. Regard should be especially had to regularity in this matter in acute diseases, such as fevers. For those afflicted with piles, the best time for evacuating the bowels is immediately before retiring for the night; for the reason that during the night, while the body is in a recumbent posture, the protruding part returns to its proper place, and the surrounding organs acquire added tone and strength to retain it there. The bladder, as well as the intestinal canal, should be regularly and frequently evacuated. Most distressing and incurable complaints are caused by bad habits

and false delicacy in this particular. Teachers should be especially careful, in this respect, with regard to their younger pupils.

THE MUSCLES.

The Law—That whenever a muscle is called into use, its fibres increase in thickness, and that it correspondingly diminishes with disease, is the law of the muscular system. The force of action of a muscle is proportioned to this thickness. In other words, the action and power of any organ measure each other. In order, then, that the muscular system may be prepared to meet the demands of nature and occasion, it must be exercised.

Limits of the Law—These are full growth, or the maturity of life and power. Whenever the muscles act, the flow of blood is increased in the arteries and veins. This increased flow causes a more rapid deposit of the matter of which the muscles are composed. The deposit of new material will be in excess of that removed, and the size and energy of the vessels increased, if the exercise is equal to the power of the system. So the muscles become strong by use, or labor.

Excess—Exercise, either for pleasure or profit, should never be carried to the point of exhaustion—though this should be distinguished from fatigue—if one wishes to secure their utmost capacity. The hard labor frequently diminishes the weight, by several pounds, within a few weeks. This is also illustrated by the attenuated frames of overtasked domestic animals. The loss, in these instances, exceeds the new deposits of material. In a word, the muscles are lessened in size and diminished in power, whenever the exercise is continued so long as to produce a feeling of exhaustion.

The Practical Inference—The strength should be the measure of exertion. Any other rule will fail to invigorate the system. Exercise and labor must therefore be adapted to the strength of the individual. If a mile of riding or walking cause slight fatigue, this may be beneficial, while the exhaustion occasioned by doubling the distance may prove highly injurious. It is therefore plain that the same amount of exercise will not do for different people.

Rest—The long strain on a muscle enfeebles its action and impairs its contractibility. One can hold the arm extended but a short time, whatever effort he makes. This holding out of the arm, with a book in the hand, is sometimes inflicted as a penalty in schools and it is a severe one. Most boys would prefer a sound whipping. The law of health is that relaxation must soon follow contraction; or in other words, that rest must follow labor.

School—Frequent, though short, recesses are necessary for small and feeble children; the younger and feebler the children,

the greater the necessity. This is founded on the organic law that muscular action must be alternated by rest. Any one may notice that the small children in a school room, after sitting a short time, become restless. A change of position, for a short time, will enable their imperfectly developed muscles to regain their strength when they will again support the spinal column without pain.

Exhaustion—This is the constant and necessary effect of continuous muscular contraction. No difference how seemingly light and easy the exertion, its continuance becomes, after a time, intolerably wearisome. The mere motion of a finger, if long continued, exhausts the whole frame. Change of employment brings a new set of muscles into play, and is often equivalent to rest.

The Utmost Muscular Capacity—This is to be attained not by prolonged exertion, but by taking sufficient time for rest. Of two men of equal strength, the judicious and understanding one, who never hurries and who rests at regular intervals when the muscles require relaxation, will accomplish far more labor, in a protracted time, than the nervous, over-strained and long-continued exertions of his competitor. This principle may be profitably applied to the labor of domestic animals, as to all other kinds of employment. Convalescing invalids frequently suffer relapses from inattention to this law.

A Common Experience—Neither growing youth nor habitually hard-working men can endure the severe muscular strain which can easily be borne by those who are at once mature and unexhausted. Napoleon I. complained that his boy-conscripts could not bear the severe marches of his campaigns and in our own war between the States, the young men from the towns and cities were found capable of sustaining vastly more hardships than the young men from the country. This was owing, in the first instance, to immaturity, and in the second, to the habitual exhaustion of the farm-laborer.

Graduation of Exertion—After rest, the first motions should be slow, and the increase to strong or violent exertion, very gradual. Of a task requiring several hours for its completion, considerably less than half should be performed in the first half of the allotted time. On this plan, we should conduct the labor of domestic animals. The reason for this is that the muscles require more blood and nervous fluid when in action, than when at rest; and as the circulation of these fluids can only be increased gradually, it follows that sudden and violent muscular exertions have an effect similar to that of working machinery unoiled; that is, the friction of the parts consumes the very substance of the machinery.

Gradual Rest—This is also important. If one has been making violent or long-continued exertions, it is better to substitute some other or gentler exercise than to turn immediately to rest. Thus time is allowed for the reflux of the blood and nervous fluids into their ordinary and more diffused channels, instead of allowing

them to stand and stagnate, so to speak, when the muscles cease to use them. The stiffness and soreness of the muscles after rest is an evidence that the change from exertion to repose was too sudden. If the skin be covered with perspiration, produced by the severity of the labor, this suggestion is so much the more important. Never sit or lie down to rest in this state. It is the well-known and proper practice of great walkers and other athletes to have themselves well rubbed down, like race-horses, before they go to rest.

Pure Blood—This affords the highest muscular stimulus; pure blood can only come from a strong and healthy digestion and this again depends on a clean and properly warmed skin, pure air, abundant sunlight and the free and unrestricted movement of the ribs, diaphragm and lungs. It is of great practical importance to both men and women to observe these conditions, whatever may be their vocation or mode of life.

Open-air Exercise—This is important for the reason that the purer the air we breathe the more stimulating will be the blood supplied to the muscles, and the longer continued may be their exertion without fatigue or injury. Thus also we see the importance of thoroughly ventilating all inhabited rooms and especially sick-rooms. The patient can sit up longer when the air is pure and he finds his strength and appetite in every way improved. This is the reason a patient can sit up longer while riding in a carriage than in an easy chair in the room where he has been ill; it is the difference made by pure and impure air.

Light—Exercise should be taken as much as possible in the light of day, and unless the sultriness of the hour or season forbid, in the full sunlight. Men and animals, as well as plants, require the stimulus of this agent. It would be well if all shops, kitchens and sitting-rooms could be situated on the sunny side of the house. Students especially should take their exercise during the day and laborers shun night-tasks. Like plants that grow in the shade, persons who dwell in dark rooms are paler and less vigorous than others.

Regular and Frequent Exercise—Days of severe toil, followed by days of idleness—such is the custom of the savage and unreasonable man. Exercise, on the other hand, should be regular and frequent. A weekly fast of twenty-four hours is not more absurd and unnatural than a weekly suspension of exercise for a like period. It is not more true—though a matter of common experience and observation—that people who practice fasting, ruin their health thereby, than that those who abstain from daily exertion injure themselves correspondingly. The late Thomas Carlyle said he came out of a three-days' fast with a Devil of Dyspepsia that haunted and cursed his whole life; and many a man and woman, if they only knew it, have emerged from corresponding periods of idleness with the twin of that same Devil of Dyspepsia. It is true that the evil consequences of neglect of exercise steal more slowly

and gradually upon their victim; but they are not the less dangerous or deadly, and sooner or later they are manifested in muscular weakness, irritability and dyspepsia.

Kind of Exercise—That species is best which calls into action the greatest number of muscles. For this purpose farm labor and domestic employments, care being taken that neither is pursued to the point of drudgery, are the best as vocations; and fencing, rowing, archery, quoits and dancing, where the place is open and the air pure, are the best among the pastimes. It is all-important that every part of the muscular system should have its proper share of exercise.

The Proper Hour—While this must depend largely upon circumstances, as a general rule morning is better than evening, when the air is pure and the ground dry; because the physical powers are greatest in the morning. Shortly before or after meal-time severe exertion should be avoided, though gentle, recreative exercise is better than complete idleness on either of these occasions. So, severe mental toil should be hedged about by a similar period of recreation, separating it from violent physical exercise. Where circumstances will at all permit it is best to observe these distinctions of time.

Effect of Sleep on the Muscles—The wearied and exhausted condition of watchers, night-police and others who spend a part or the whole of the night in some active employment, illustrates the fact that it is not well, if it can be avoided, to invert the common hours of rest and labor. The reason of this must lie in the fact that the quality of the day-sleep is not equal to that of the night; it is neither so sound nor so refreshing. The quiet hours of night seem sacred to repose, and the alternation of day and night seems specially adapted to the wants of the system. The muscles require sleep to restore their wasted energies, and the best sleep is their best restorative.

Compression—Any compression is injurious to the strength and tone of the muscles to which it is long applied, for the reason that it prevents the free passage to them and through them of the blood which is their only source of supply. This may be illustrated by the case of a man with a broken limb; the compression of the bandages lessens in a little while the size of the limb, and this can not be restored until they have been removed. In this way, tight dressing enfeebles, and in the end paralyzes the muscles of the back and produces curvature of the spine, projecting shoulders and diseased lungs. Every unyielding substance, such as whalebone, wood and steel, should be banished from the toilet as enemies of life.

Mind and Muscle—A full, nervous impulse is essential to the most energetic muscular action, and this the mind alone can supply. This is the secret of the preternatural strength of anger, and of other great excitements. So, the tone and contractile energy of the muscular system are always, though in a less degree, dependent upon the co-operation of the mind. Every one has experienced

the fact that less fatigue attends and follows exertion under a buoyant and healthy mental stimulus, than without it. While reluctant labor is exhausting, cheerful and willing labor leaves hardly a trace of toil. A successful sportsman pursues his game without any sense of fatigue, while, if unsuccessful, he finds it a task to drag himself along. In war, when the long march seems to have exhausted every muscular energy of the tired troops, let but the enemy appear and every one is on the alert and ready for vigorous action; while should the alarm prove false the mental stimulus is withdrawn and lassitude again falls upon the army. Therefore it is that more depends upon the habitual spirit of the soldier than upon the bulk and strength of his muscles, and that striplings have so often out-wearied and out-marched the sturdiest veteran in the ranks. So in the daily vocations of life, if the mind have some cheerful or noble incentive to toil, the tiresomeness of labor is greatly diminished. Those men are the true captains in the army of labor who are capable of inspiring the workmen whom they control with a cheerful and willing spirit. One such foreman or overseer is worth for the interest of his employer half a dozen of the dull or driving sort. Hence also walking for mere exercise—though this is better than no exercise of the muscles—is comparatively irksome and unprofitable. Let your daily walk have some errand or objective point, to which the mind can look with interest, and health and strength will more speedily result.

THINGS WORTH KNOWING.

What our Whiskies and Teas are Made of.

An analytical chemist lately made a number of investigations into the composition of the different kinds of whisky and tea as sold in the city of Glasgow. The result of his examination of these articles, procured indiscriminately from retail shops, discloses a state of matters sufficiently shocking to deter many people from ever indulging in either of these popular beverages again without previously submitting them to a chemical analysis.

The adulterants found in whisky were fusil oil, naptha, sulphuric and hydrochloric acids, sulphates of copper and zinc, shellac, turpentine, etc. These ingredients it appears are added to the genuine article to enable the dealer to mix with it a larger proportion of water than it would otherwise take up without detection by his customers; they therefore give a fictitious strength to the whisky, and thereby delude the thirsty folk who swallow it into the belief that they are being supplied with the utmost value for their money. The effects which follow the immoderate and long-continued use of the purest alcohol are serious and deplorable enough, but what must they be when that intoxicant has been adulterated with such noxious elements as here mentioned?

Out of twenty-seven samples of black tea that were analyzed only six were found to be genuine, while of eight specimens of green tea examined, all were more or less mixed with foreign matters. The substances employed in the adulteration consisted of exhausted tea-leaves, the leaves of *camelia sasanqua*, *chloranthus* (*inconspicuus* and *officinalis*), willow, hawthorn, oak, sloe, elm, beech and elder, pieces of the rind of some plant of the pomegranate order, catechu, clove and cinnamon buds, turmeric, starch, indigo, Prussian blue, China clay, sand, chalk, gypsum, salts of iron, etc.

Few persons who daily partake of what they innocently believe to be the "cup that cheers but does not inebriate," are aware that they are pouring into their delicate stomachs such disgusting and poisonous matters as this chemist assures us are rarely absent from the tea sold in the shops. What is true of Glasgow there is too much reason to fear is equally true of all the towns and villages in the United States; for, while some part of the adulteration may be, and no doubt is, carried on by the small retailers, the greater part is unquestionably effected by experienced manipulators on a large scale in London, San Francisco, New York and China.

After the above revelation, who will have the courage to drink his beloved beverage as heretofore?

How to Administer Injections.

As very few know how to properly administer an injection, we submit the following directions: Take a wash-basin nearly filled with warm water (about blood-heat is the best). Grease the rectum-tube well before using it. Then, before introducing the instrument into the bowel, work it a few times through the water back into the basin. The object of this is to prevent injecting air into the bowels; fill it with water, for the reservoir of the instrument being full of air, on the first squeeze it is driven into the bowel, and sometimes prevents the injection being proceeded with. Then commence injecting, but proceed very slowly. This is one of the secrets of success. The sudden introduction of a large quantity of water stimulates the muscular action of the bowel to such an extent that there is felt an irresistible desire to evacuate or empty the bowels immediately, and this is one of the reasons why so many persons fail in using an injection. Should pain be felt, or the desire to evacuate come on, after about half a pint has been injected, wait a few minutes until it subsides, and then go on again very cautiously, the pressure on the instrument being very slowly performed. The cause of the pain and of its disappearance is this: the bowel, not being a straight tube but flexed upon itself, does not permit the water to traverse it readily, so that the fluid and wind displaced by the fluid are obstructed at each bend of the intestine, but it is only temporary, and by waiting, the discomfort felt passes away and the injection can be proceeded with.

The question is often asked, "How much water shall I inject?" and this is a most important question to answer. The answer should be, "Go on injecting until the desire to evacuate is too strong to resist, but you must not bring this on by too rapid an injection." As already stated, the wash-basin should be nearly full, for two reasons: In the first place the whole may be wanted, and in the second place if you have not enough water, it is very inconvenient to mix a fresh supply at that time. It must be borne in mind that the quantity of water required depends on the part of the intestines where the accumulation is. In some cases this is very high up, as in the ascending colon. In this case a large quantity of water will be required. In other cases the fecal mass may be in the rectum or descending colon, when a small amount will suffice. In some cases only a pint of water may produce an evacuation.

Some persons are unable to bear the introduction of more than a small quantity of fluid when all precautions are taken, as an instant desire is felt to discharge it. When the patient can not possibly retain more than a small quantity of water, it is better to repeat the injection once or twice, as a second or third attempt will often succeed.

The Use of Cathartics to be Avoided.

In reference to these medicines, Dr. Wildie says:

"In actual practice it so seldom happens that an aperient, such as castor-oil, is required, that in my thirteen years' experience, during which time an extensive public appointment gave me 1,300 fresh cases annually, besides dispensary and private practice, I did not give an aperient three times in a year, and then it was only a dose of castor-oil. This conclusively proves the non-necessity of purgatives as used by the old practitioners.

"I regard the administration of purgative pills or aperient mixtures as totally out of the question; worse than useless. I have never prescribed such abominations since I abandoned the old methods of treatment.

"In case of being forced to give aperients by the patient's obstinacy, let the following rules be strictly enjoined, viz:

"First—The use of an aperient is only a temporary expedient, and will never cure the patient.

"Secondly—Aperients are never to be used when the patient will use an injection.

"Thirdly—They should only be repeated after several days' interval.

"Fourthly—They are never to be used where constipation is only a symptom of fever, inflammatory action or the like, as in such cases the only proper way to relieve the bowels is to cure the fever or inflammation, after which the bowels will begin to act for themselves."

Poisonous Soothing Sirups.

A writer in the *Pacific Medical Journal* recently made an important and interesting *expose* of the dangers which attend the use of patent "Soothing Sirups." His attention was first called to the baneful effects and the enormous consumption of these sirups by an article in the *California Medical Gazette*. The author had been called to see a child aged six months, apparently in a dying condition from the effects of some narcotic poison. He found that the soothing sirup was the only medicine which had been administered, and of it the child had taken two teaspoonfuls within ten hours. There were remaining in the vial from which the two teaspoonfuls had been taken, ten drachms, which yielded, on analysis by a skillful chemist, nearly one grain of morphia and other opium alkaloids to the ounce of sirup. Dr. Murray, in the article already referred to says: "I have ascertained that there are about one hundred thousand two-ounce bottles of it sold annually in this city, containing about one hundred and eighty thousand grains of morphia, which are given annually to the infants of this State." If the infants of California consume two hundred thousand ounces of soothing sirup, it is but fair to assume that there is seventy-five times that

CATHARTICS

THEY WORK WHILE
YOU SLEEP



BUT HEALTH

WILL BE INJURED

WHEN AWAKE

HEALTH DESTROYERS.

Read page 254 and learn there the result of taking cathartics that work "while you sleep," as they do *all the time* to injure the tissues, weaken the parts and invite disease.



DOPING THE CHILD WITH SOOTHING SYRUP.

When a mother knows what soothing syrup is composed of, and the effect that it will produce later on, she will never dose her child with it again. See page 254.

amount used in the whole United States, which would make fifteen million ounces of sirup, or about fourteen million grains of morphia. Setting aside the direct cost of this nostrum, it would be scarcely possible to estimate the damages which the people of the United States sustain indirectly from its use.

Ventilation of Sleeping Rooms.

If two persons are to occupy a bed-room during the night, let them step on a weighing scale as they retire, and then again in the morning, and they will find their actual weight is at least a pound less in the morning. Frequently there will be a loss of two or more pounds, and the average loss throughout the year will be a pound of matter, which has gone off from their bodies, partly from the lungs and partly through the pores of the skin. The escaped matter is carbonic acid and decayed vegetable, animal matter or poisonous exhalation. This is diffused through the air in part and part absorbed by the bed-clothes. If a single ounce of wool-cotton be burned in a room, it will so completely saturate the air with smoke that one can hardly breathe, though there can only be one ounce of foreign matter in the air. If an ounce of cotton be burned every half hour during the night, the air will be kept continually saturated with smoke, unless there be an open window or door for it to escape. Now the sixteen ounces of smoke thus formed is far less poisonous than the sixteen of exhalations from the lungs and bodies of two persons who have lost a pound in weight during the eight hours of sleeping; for while the dry smoke is mainly taken into the lungs, the damp odors from the body are absorbed both into the lungs and into the pores of the whole body. Need more be said to show the importance of having bed-rooms well ventilated and of thoroughly airing the sheets, coverlets and mattresses in the morning, before packing them up in the form of a neatly made bed?

Position in Sleep.

The better position to occupy in sleep is on the right side. This gives the contents of the stomach a chance to pass out more readily than if lying on the left side or on the back. If you sleep on the left side the contents of the stomach pass up instead of down, in which case gravitation hinders instead of aids in the work. If you have eaten a hearty meal and go to sleep on the back, the weight of the food rests on the great vein near the back-bone and hinders the flow of blood. Some physiologists claim that it is better to sleep with the "head to the North," both in health and sickness. The pillow should be only thick enough to allow the head to be on a line with the shoulder when lying on the side, that is, to be a very little above a horizontal line, for then it is easier for the heart to throw the blood to the head through the arteries, while there would be a little incline to favor the descent through the veins.

Spine Complaint.

It is asserted by those who should know the facts, that in Ireland and other countries where milk-pails, etc., are continually carried on the head, no such ailment as spine complaint is to be found. And there is yet another very important point in rearing children, often neglected for want of thought, viz., teaching them to go to sleep in a proper and healthy attitude. The head should be but little raised; the chin on the pillow, not bent down on to the chest; the mouth shut, and, above all, the backbone stretched straight; or, if at all bent, bent into a hollow curve, like a horse's back, instead of into a round curve like a pig's.

Sure Test of the Extinction of Life.

If a limb of the body—a finger is best for the purpose—be constricted by a strong ligature, quite tightly, there will be seen, if the subject be yet alive, a reddening of the constricted member. First, the part in question becomes red, then the red color becomes darker and darker and deeper in hue, till it is finally converted into a bluish-red, the whole limb being from its tip to the ligature which encircles it, of a uniform color, except that at the region immediately around the ligature itself there is to be seen a narrow ring, which is not bluish-red, but white. The bluish coloration of the nails or of the finger-tips, so often seen on the dead body, as well, too, in certain cases of blood disease, need not be regarded as any source of fallacy, for, after the ligature of a finger, as long as life remains in the body, the whole of the limb from the place of the ligature to the extremity will be uniformly blue-red, but if the coloration do not take place, or only at a circumscribed spot on the limb, it can be with certainty concluded that the spark of life is extinct.

Neglect of the Foot-bath and Stockings the Cause of many Doctor Bills.

The poisonous exudations, by not being removed, are gradually absorbed again into the system by the large pores that are located on the bottoms of the feet. It is, therefore, necessary that they should be washed daily with pure water. This neglect to keep the feet clean, coupled with the pernicious habit of wearing socks four or five days or a week without a change, is one of the most prolific causes of disease. Stockings or socks should not be worn more than a day or two at a time. A good way is to wear them one day, then leave them off one day until they are aired, when they may be worn another day. If they are worn longer, the fetid, offensive matter from the feet that is deposited on the socks is readily taken into the system and blood by the absorbent vessels of the feet.

For the Prevention of Baldness.

A medical author says, "After trying many remedies, but all in vain, I have finally found a successful one; which is the German or French soft, green soap. Take two ounces of the soap and the same amount of alcohol, and twenty or thirty drops of the oil of lavender as a perfumer. This is used as a shampoo, every morning or evening pouring one or two tablespoonfuls on the head. Upon the addition of water and a smart friction with the fingers, a copious lather is soon produced. After keeping up the shampooing process for some four or five minutes, all the soap must be washed out of the hair by the free use of warm or cold water, and the hair thoroughly dried by means of gentle friction with a soft towel. To obviate a disagreeable feeling of tension of the scalp, and to keep the scalp from getting too dry, follow up the shampooing with castor-oil one part, to alcohol three or four parts. But the best, as well as the neatest preparation that I have employed for this purpose, is cosmoline. This is a product obtained from petroleum and is comparatively cheap.

The Health Tree—Blue Gum.

M. Gimbert has been long engaged in collecting evidence concerning the Australian tree, Blue-gum or *Eucalyptus globulus*, the growth of which is surprisingly rapid, attaining besides gigantic dimensions. This tree possesses an extraordinary power of destroying miasmatic influence in fever-stricken districts. It has the singular property of absorbing ten times its weight of water from the soil, and of emitting antiseptic camphorous effluvia. When sown in marshy ground it will dry it up in a very short time. The English were the first to try it at the Cape, and within two or three years they completely changed the climatic condition of the unhealthy parts of the colony. A few years later its plantation was undertaken on a large scale in Algeria. At Pardock, a farm situated on the banks of the Hamyze, was noted for its extremely pestilential air. About 13,000 of the eucalyptus were planted there. In the fever season not a single case occurred; yet the trees were not more than nine feet high. Since then complete immunity from fever has been maintained. The farm of Ben Machydlin was equally in bad repute. In five years the whole ground was dried up by 14,000 of these trees, and farmers and children enjoy excellent health. At the factory of the Gue de Constantine, a plantation of eucalyptus has transformed twelve acres of marshy soil into a magnificent park, whence fever has completely disappeared. In the island of Cuba this and all other marsh diseases are fast disappearing from all the unhealthy districts where this tree has been introduced. A station-house in the Department of the Var was so pestilential that the officials could not be kept there longer than a

year. Forty of these trees were planted, and it is now as healthy as any other place on the line.

This tree is now being cultivated very extensively in California. For full information upon its medical properties, see *Materia Medica*, page 501, Vol. I.

Influence of Marriage on the Duration of Life.

M. Bertillon lately read before the Academy of Medicine a paper on the relative influence of marriage and celibacy, based on statistical returns derived from France, Belgium and Holland. In France, taking the ten years 1857-66, he found that, in 1,000 persons aged from twenty-five to thirty, four deaths occurred in the married, 10.4 in the unmarried, and twenty-two in widowers; in females at the same age, the mortality among the married and unmarried was the same—nine per 1,000, while in widows it was seventeen. In persons aged from thirty to thirty-five, the mortality among men was, for the married, eleven per 1,000, for the unmarried, fifteen, and for widowers, nineteen per 1,000; among women, for the married, five; for the unmarried, ten; and for widows, fifteen per 1,000. There appears to be a general agreement of these results of marriage in Belgium and Holland, as well as in France and Paris.

Carpets, Dust and Disease.

An atmosphere impregnated with the dust which has been gathered in carpets and remained there for a considerable length of time is positively unhealthy. The dust, after being stagnant for some time, especially in warm weather, presents myriads of animalculæ. To prevent the evil the carpet should be cleaned often. The dust should be thoroughly removed every month. The trouble of taking up, shaking and replacing will be amply repaid, first in the matter of health, and secondly in preserving the carpet. We advise good housewives to make a note of this.

Pure Air in the Kitchen.

It is an essential to health that the air of the kitchen should be as pure as that of the parlor, because food prepared in foul air partakes of the foulness to a great extent. A little sink near a kitchen door-step, inadvertently formed, has been known, although not exceeding in its dimensions a single square foot, to spread sickness through a whole household. Hence everything of the kind should be studiously obviated, so that there should be no spot about dwelling which can receive and hold standing water, whether it be the pure rain from the sky, the contents of a wash-basin, the slop-bowl or the water-pail.

How to Arrest Coughs.

Any sensible person will always endeavor to suppress coughing, sneezing and other morbid phenomena of respiration, as such actions sometimes become annoying to others and are therefore proportionably distressing to the subject of the affection. We have sometimes heard an eloquent minister pause a few moments in his sermon and, with eyes directed to the spot whence the cause of the interruption proceeded, request that an effort might be made to arrest it. What would have been given under such circumstances to know that by simply pressing the nerves in front of the ear, the cough would occasion no further trouble. Hard pressure on the roof of the mouth, or on the nerves of the lip in the neighborhood of the nose, will have a similar effect; the latter is well known to prevent sneezing. Hiccough also, though in a less degree, is arrested by pressure in the front of the ear. Children and possibly a few vain and selfish persons might be unwilling to try such simple expedients, preferring the observation or sympathy which they sometimes endeavor to secure by some idiosyncrasy of the kind. But that the will exerts a forcible power in the matter is very evident; and thus the apparently arbitrary threats, "Whoever coughs will go to bed at seven to night," "The first patient who coughs will be deprived of his food to-day," sometimes resorted to in the case of children and patients, are fully justified by the results. We are assured that a French nurse employed this means of arresting a cough with great success.

Keep Ammonia in the House.

No housekeeper should be without a bottle of spirits of ammonia, for besides its medical value it is invaluable for household purposes. It is nearly as useful as soap, and its cheapness brings it within reach of all. Put a teaspoonful of ammonia into a quart of warm soapsuds, dip in a flannel cloth, and wipe off the dust and fly-specks, and see for yourself how much labor it will save. No scrubbing will be needful. It will cleanse and brighten silverware. To a pint of suds add a teaspoonful of the spirits, dip in your silver spoons, forks, etc., rub with a brush and polish with chamois skin. For washing windows it is very desirable; put a few drops of ammonia on a piece of paper and it will readily take off every spot or finger-mark on the glass. It will take out grease-spots from every fabric; put on the ammonia nearly clear, lay blotting-paper over the place and press a hot flat-iron on it for a few moments. A few drops in water will clean laces and whiten them as well; also muslins. Then it is a most refreshing agent at the toilet-table; a few drops in the water cleanses the hair from dandruff and dust. Added to the foot-bath it entirely absorbs all noxious smells so often arising from the feet in warm weather.

DIVISION SEVENTH.

How to Cook Food to make it Healthful, Palatable and Digestible, thus Distinguishing from Cook-books, that give receipts destructive to Digestion, Health and Life.

Food is a subject of great interest to the healthy and the sick, which concerns not merely gratification of taste, or satisfaction of the appetite, but also the maintenance of life. In health, diet may be left very much to the inclination of the individual, both with respect to quality and quantity; since unless appetite be perverted and depraved by rich sauces and high seasonings, it is on the whole the best guide. Judgment must, however, be exercised in respect to eating and drinking, or man soon degenerates into a mere animal. In disease, on the other hand, the appetite fails to guide, and intelligent judgment is more required in the selection of different articles of diet, because regulation of quantity and quality is of greater importance than in health. The taste of an invalid is in most cases so perverted that he may reject the most suitable article, and desire the most injurious. His appetite is too capricious to be trusted to regulate quantity. Hence the severity of the disease might be increased and the life of the patient imperiled, if taste and appetite were permitted to govern the selection of food, instead of intelligent knowledge of the properties of different foods, and judicious experience in their administration. There should be no exception to this rule except by way of experiment, when observation may be carefully made of the effects of food craved by the patient, given in cautious quantities, when the results may be taken for guidance.

In not a few disorders an acquaintance with dietetics is as essential to the proper treatment of the patient as a knowledge of drugs, for the action of medicine may be counteracted by unsuitable diet. It is of great importance to know what variations in food are permissible, for an invalid soon tires of the same food. Tea and toast may be palatable for a time, but "What else may I eat?" is soon the inquiry he ruefully puts. Experience shows too that there is considerable ignorance of the best methods of preparing food suitable for the patient. In the present day it is deemed desirable to lay down for the guidance of mistresses and servants the principles of cooking and to give public lessons in cookery. But these are for the food of the table, not for that of the sick-room. The



COOKING FOR HEALTH.

More people killed by bad cooks than by bullets, bayonets and swords.

Health and life, in a great measure, depends upon what goes into the stomach.

From ten to twenty years "chopped off" of life because of improperly cooked food.

See Division Seventh on cooking food to make it both healthful and palatable.

latter requires more care in selection, more special attention in preparation, more delicacy in serving, than the former. For instance, how much good meat has been wasted, and how many patients have been troubled, because cooks instead of making beef-tea made soup?

Dietetic Rules Important—Good health can be maintained, and when disturbed can be restored, only by the adoption of rules of diet which insure a due supply of healthy blood to the system. The waste constantly resulting from the common duties of life must be repaired, and if the quality of the blood be deteriorated in disease it must be improved. But the blood is what the food makes it. As the supply of food, then, is increased or decreased, or its quality altered, so the blood is affected and the health is maintained or lowered. Hence the necessity for observing dietetic rules, as in consequence of their infraction many diseases arise. The badly cooked, poor food of the working classes is often innutritious and causes various disorders, the best cure for which is not medicine, but sufficient, suitable and properly prepared food. Any one who has been much among the poor, visitors who have tended the sick, practitioners who prescribe in dispensaries, know full well how important a part sufficiency of appropriate diet plays in the condition of those to whom they minister.

The digestibility of food and its subsequent assimilation depend as much upon the mode of its preparation as upon the condition of the person who eats it. If this be true of the healthy, it is much more true of the sick. Not infrequently a change in the method in which food is cooked is the simple means whereby it may be rendered acceptable and easily digested by the individual who had previously suffered from taking it. Such change may afford marked relief in some functional bowel disorder. In chronic diseases of the digestive organs, in which the appetite remains unimpaired, or is inordinately increased, attention to dietetic regulations becomes of great importance, since in such cases there is considerable danger lest the boundaries of prudence should be overstepped, in yielding to the urgent claims of appetite, demanding excessive or unsuitable food.

It is impossible to lay down regulations for the rational and methodical use of food in health and disease; for in this as in other matters, each case must be dealt with on its own merits. Sex, age, employment, condition of life, physical form, idiosyncrasies, circumstances—all are elements in the solution of this problem, "What to eat and what to avoid." The father must consider the wants of the family, the mother the special needs of a frail child, the physician the peculiar requirements of his patient, in making arrangements for suitable dieting; no precise hard and fast rules can be laid down. General principles alone can be enunciated, known scientific facts can be promulgated; well tried common experience can be recorded; then, out of the materials thus supplied, what is the most fitting for

each case must be selected with intelligence and judgment. Even when a selection is thus made, it too frequently happens that instructions are not observed. Ignorance, prejudice and carelessness prevent compliance with judicious advice. Nevertheless, health is maintained, and where impaired is often restored, in spite of these drawbacks. Robust health would be more common, recovery more rapid, and mortality much less, were dietetic rules universally observed.

Violation of Instructions Wrong—Neglect, or positive violation of instructions in this respect is unpardonable. The physician prescribes certain food just as he prescribes certain medicine. But while the medicine may be honestly given, the food is withheld or other food substituted. The patient and the friends of the patient often deceive the physician with reference to diet and deem the original transgression and the subsequent deception trivial offences. The consequence is that the recovery of the patient is retarded and the physician and his treatment are disgraced. Infractions of dietetic instructions are always occurring of which nothing is known unless aggravation of the disease be so marked as to lead to disclosure of the indiscretion.

The impossibility of prescribing fixed regulations for diet is obvious, from the fact that some persons can take what others are obliged to reject. The saying, "What is one man's meat is another man's poison," contains much truth. Even when there is a similar derangement of the digestive organs some persons can eat with impunity what others must eschew. Some of the least digestible articles of food, such as fried fish, cabbage, cheese, fats, etc., may be eaten by some dyspeptics, while others cannot partake of them without suffering severely.

In considering the kinds and proportions of food to be eaten, it should be remembered that even healthy persons do not always assimilate all the elements possible. Some escape digestion and pass out of the system with the waste, and allowance must be made for this. Food which requires some strength of digestive function may be thrown away upon an old person whose limited secretions cannot dissolve it and who may therefore be only insufficiently nourished, while the same food would be easily and advantageously assimilated by the young. On the other hand, easily digested diet suitable and sufficient for an old man might be unsuitable and insufficient for an active youth. The employments of life also necessitate variations in kind and quantity. Even appetite is not an infallible guide. Physical and mental labor, out-door and in-door work, demand difference in diets. The nursing mother requires more food and of a different kind from that taken by the quiet housewife of sixty years of age. The patient suffering from chronic unhealthy discharges must meet that drain upon the system. Morbid conditions and functional derangements of different organs, though not amounting to an illness, or sufficient to keep a person

from ordinary work, require consideration in regimen. The good cheer which includes considerable nitrogenous aliment, while prejudicial to a gouty subject, is beneficial to a man who takes much exercise in the open air. The bread, which is "the staff of life," must be withheld from the diabetic. So that no dietetic rules can be laid down to suit all cases either in health or in sickness.

Fixed Rules Impossible—When the body is in a feverish state, the mouth dry, the thirst great and the pulse accelerated, very little gastric juice is secreted. In such a case, it is obviously improper to take food which requires the solvent of the gastric juice for its digestion. It may contain the essence of nourishment, be the very best food cooked in the very best manner, but will prove utterly useless in the stomach, irritating to it and hence injurious. In the feverish state, beef-steak is very unsuitable diet, especially if dished up with onion-sauce and condiments, and washed down with beer. Since no nourishment can be derived from it, it should be avoided until the feverish symptoms have disappeared and the stomach has regained its tone, however palatable the steak may be, or however anxious friends may be to strengthen the patient. At the commencement of fever everything is loathed, but cold water. After a while the feverish symptoms abate, then toast or barley-water is agreeable; then luscious fruits are desired and relished, and subsequently by degrees the patient is able to satisfy his natural appetite, convalescence becomes more rapid, and by and by beef-steak may once more be eaten. All this is dietetic regimen.

In brief, the regulation of diet is of importance to both the healthy and the sick; but definite rules cannot be laid down by which the diet may be regulated; each one must judge for himself or must be guided by the judgment of others—a judgment which we hope may be intelligently formed and directed by a perusal of the following pages.

RELATION OF FOOD TO NUTRIMENT.

Food has been defined as a substance which, when introduced into the body, supplies material which renews some structure or maintains some vital process. Medicine modifies some vital action, but does not supply the material which sustains such action. A supply of suitable food is therefore essential during the medical treatment of disease; for medicine alone will not, and is not designed to, sustain life. Neither, on the other hand, will changes of food so modify vital action when it is disordered as to render the administration of medicine superfluous. Nevertheless it must be allowed that diet does play an important part in promoting recovery from disease, and that some kinds of food do stimulate vital action in a degree far beyond the actual amount of nutritive material they supply.

Elements of Food—The body requires, for the maintenance of its existence, for its growth and for the performance of its functions, a variety of kinds and a variety of forms of food; but as its constituent elements are limited in number, the chemical composition of the food need not include a great variety of factors. Carbon, hydrogen, oxygen and nitrogen exist in far larger quantity than any other elements; sulphur and phosphorus are also present; but other constituents exist in only exceedingly small quantities. Food should, therefore, supply all these requirements in different combinations, if the body is to be maintained in health. It is not, however, necessary that one kind of food should yield every kind of material required in the structure of the body, for then that one would be sufficient; but it is essential that it contain some of the material required, and it is also essential that by the combination of different foods all the material required is supplied. Some foods are undoubtedly more valuable than others, either because they supply a large quantity of nutriment in a small compass or because it is in such a state that it can be easily assimilated. These are, of course, to be preferred when the functions of the body are deranged by disease.

Food is required by the body for two chief purposes, viz.: To produce and maintain the various tissues while they are fulfilling their divers vital functions, and to generate heat, without which life would cease. That the maintenance of the tissues is of great importance is evident from the decay of life which is invariably associated with the wasting of the tissues. That the generation of heat is essential is evident from the fact that, while waste of tissues may go on for a long period before death occurs, the removal or lessening of heat is soon followed by the termination of life. When the body is in a state of disease we have therefore to meet these two principal requirements—the maintenance of tissue and the maintenance of heat. Now, in accordance with these requirements, there are foods which are assimilated by particular tissues and go to maintain them, called in general terms “flesh-formers;” others sustain the vital heat and are known as “heat-formers;” others again both nourish tissue and supply heat.

Animal and Vegetable Products—Food is derived from all natural sources—from earth, water and air; from solids, liquids and gases; from substances living and organic, or inanimate and inorganic. The food thus variously derived is converted, by the action of vital forces, into those compounds which the body can assimilate and change into a part of itself. But before it can be so assimilated in the human body, the greater part of it must become organic. Chemical elements uncombined are of no service as food. They must be built up into some living organism to be of service. Hence our food generally consists of animal and vegetable products, the animal having been also previously derived from the vegetable. Indeed, all our foods are primarily derived from the veget-

able kingdom, for no animal has the physiological power of combining mineral elements so as to form them into food. But the vegetable assimilates inorganic materials under the influence of light, storing up in itself various elements, in different combinations, essential to the formation and nutriment of vegetable and animal structures. So, without taking much inorganic matter directly into the system, we obtain what is necessary through its presence in the organic.

In popular language, what is taken into the system is termed "food" and "drink;" the former including solid, the latter liquid matter. But, convenient as these designations may be, they do not accurately represent the facts of the case. Milk, for instance, is very rich in solids, while nine-tenths of the component parts of turnips consist of water. A better classification, therefore, is to arrange all food whether liquid or solid, into organic and inorganic portions—the organic comprising those elements which are combined and produced only through the agency of some living structure, whether vegetable or animal, and the inorganic those which are derived directly from the mineral kingdom. Water and salt are inorganic.

In view of their chemical composition, organic foods are generally classified as nitrogenous and non-nitrogenous. The nitrogenous consist of carbon, oxygen, hydrogen and nitrogen, in different proportions, with generally the addition of sulphur and phosphorus. The non-nitrogenous consist of only the first three ingredients.

Nitrogenous Food—It will be observed that the presence or absence of nitrogen constitutes the chief difference between these classes; and as it enters very largely into the composition of the body, an abundant supply of it is essential. Some may suppose that, as this is an important constituent of the atmosphere—four-fifths of which are nitrogen,—it might be imbibed from the air; but it is not. It is derived from the food and must be introduced into the system in combination with other organic elements.

Among nitrogenous foods the flesh or muscular tissue of animals contains the elements which are required for forming flesh and generating heat. Hence life could be maintained for a considerable time on animal food alone. Bread, among vegetable foods, also contains nearly all the elements required for nutrition.

Nitrogenous foods must all undergo the process of digestion before they can be assimilated and form part of the body. This process is really one of comminution and liquefaction. The food is reduced to a finely divided state by the action of the teeth, the muscles of the mouth and the saliva; when it reaches the stomach it is further disintegrated by the action of the gastric juice, with which it is brought into contact by the motion of this organ. Thence it passes out in a state of fluidity, as a very soluble and diffusible product called chyme, and easily transmitted to the blood-vessels. The food has now lost its characteristic properties, but

now the change has been wrought it is not easy to determine. Should any portion of the food, however, pass from the stomach undissolved, it is subjected to a supplementary digestive process in the bowel. The intestinal fluid and the pancreatic juice act as solvents; and the bile (though it does not appear to possess any solvent power) is incorporated with the food, which is now in a condition ready for absorption and for application to its proper use. Under meat-diet there is a more copious secretion of gastric juice; under vegetable the saliva is more abundant; showing that there is provision in the system for variation in the food, and that uniformity in food is immaterial.

The primary use of nitrogenous food is to develop and renew the various tissues; its secondary use is to facilitate the absorption of non-nitrogenous food. Wherever there is life, nitrogenous food must be present to sustain it; non-nitrogenous food contributes to its support; without the former the latter would be useless; the former being present, the latter is a very valuable auxiliary. Nitrogenous food is the main tissue-former, but it also to some extent produces force. Non-nitrogenous food produces force, but it also in some measure contributes to the formation of tissue. Indeed, the best materials for the production of working power as well as heat, are the non-nitrogenous principles; and of these the fats are more effective than others.

Non-nitrogenous Food—Non-nitrogenous food comprises fats, starch and sugar, alcohol and vegetable acids.

Fat is found in both animal and vegetable products. It undergoes little change in the mouth and stomach; but, by the action of the pancreatic juice in the small intestine, it is digested and reduced to a minute state of subdivision, ready for absorption through small projecting filaments into the lacteal system, by which it is conveyed into the general circulation of the blood. It is by this means deposited in the various tissues, fills up interstices between muscles, bones and vessels, gives regularity to the form of the body, assists in the retention of the heat of the body and forms a reserve of force-producing material, to be utilized when required. It holds the highest place as a heat-former, for by its oxydation heat is generated in the system. It also appears to facilitate the assimilation of other forms of food, and there is a prevalent opinion that, if it is not supplied in sufficient quantity, scrofulous disorders are developed.

Starch cannot be assimilated without change; when raw, it passes out of the system unaltered. If it is boiled, the granules burst and the particles are ready for conversion into sugar. This conversion would take place in the mouth, under the influence of saliva, if the food remained there for a sufficient length of time. But it is usually swallowed at once, and when it reaches the stomach the gastric juice arrests the action of the saliva. It then passes on in a semi-fluid state to the small intestine where the digestion

really takes place. The intestinal secretion and the pancreatic juice act energetically on the starch, soften and break up the granules and convert the particles into sugar.

Sugar is so easily diffused that it requires no preliminary digestive process to prepare it for assimilation. It passes without change into the circulation. If, however, it is supplied in excess of the requirements of the system, when it reaches the stomach it undergoes lactic-acid fermentation and thus occasions the acidity from which some dyspeptics suffer. When not in excess, the sugar is carried on to the liver where it undergoes certain changes which lead us to conclude that it contributes to the production of fat, but not to the production of force.

Alcohol—Alcohol is very rapidly diffused through the system. Some portion of what is taken is evaporated through the lungs and expired with the breath; some is eliminated by the liver and kidneys, and the rest remains for a long time diffused through non-excreting organs where it is transmuted into new compounds. Its actual dietetic position is scarcely determined, although many researches have been made, and much has been written on the subject. Recent researches show that alcohol acts chiefly as a stimulant, with variable advantage or injury to the constitution. It contains no nitrogen, and has therefore none of the qualities of tissue-forming foods, nor is it capable of being transformed into them; hence it is not a food in the sense of being a constructive agent in building up the body. It is very doubtful whether it produces fatty matter, except by an indirect and injudicious interference with natural processes, though there is reason to suppose that it lessens to some extent the elimination of fat already existing. If there be any fattening, it is not confined to the external development of fat, but extends to a degeneration through the minute structures of the vital organs, including the heart, inducing what is termed its "fatty degeneration." Alcohol does not produce warmth nor sustain it; the glow which is felt is deceptive, for that is due to congestion, like the warmth of inflammation; hence the serious error of taking it in cold weather, when the alcohol and cold act in combination, producing congestion of the lungs and other vital organs and often leading to fatal consequences. Nor does alcohol give and sustain strength; there is muscular excitement, which is mistaken for muscular power, produced at the expense of the tissue and drawing upon its reserve force; there is, in fact, nervous stimulus, but muscular enfeeblement. There are unquestionably occasions when it is necessary to produce the stimulus, even at the cost of subsequent reaction and debility; when, for instance, an enfeebled or fainting heart is temporarily relieved by that relaxation of the arterial vessels which the diffusion of alcohol through the blood induces, or when the flagging circulation of approaching death needs to be quickened that life may be maintained. But the impression that alcohol gives permanent strength for sustained work is as

erroneous as it is common. Alcohol taken in very moderate quantity increases the activity of the circulation, causing the heart to beat more rapidly, the pulse to become faster and fuller and the arteries and arterioles to dilate (thus producing a characteristic flushing of the face); it increases the secretion of urine, stimulates the appetite, aids digestion, excites the nervous system and exhilarates the intellectual and emotional faculties. But the price to be paid for all this may be too high, and the habitual use of even a moderate quantity may lead slowly but surely to degenerative changes. Those who drink alcohol, with any of its various admixtures, are in a greater or less degree injured by it, especially the young and "full-blooded."

Taken in large quantities, the immediate effect of alcohol is depressing and narcotic. It produces paralysis of the minute arterioles of the circulatory system, so that they lose some of their contractility and become dilated with the flowing blood. This is seen in flushing of the face. But all the internal organs are similarly affected, so that there is general vascular engorgement and consequent derangement and exhaustion. Simultaneously, in consequence of its affinity for water, it alters the condition of the blood, causing arrest of chemical changes and alterations in the composition and forms of the corpuscles. Then there follows an affection of the spinal cord, involving enfeeblement of nervous stimulus and a corresponding deficiency of control over certain muscles. A tottering gait is an indication of this. The brain-centers are then affected, the controlling influence of the will and judgment are lost and the emotions and instincts are not held in due subordination. This is followed by complete collapse of the nervous functions, the senses becoming all benumbed and consciousness lost.

Immoderate Drinking—The ultimate effect of immoderate drinking is complete degeneration, and this degeneration is certainly not confined to those who are notoriously intemperate, or may be designated drunkards. Women who are accustomed to take wine in quantities which they would not deem immoderate and who would be shocked at the imputation that they were drinking too much, have proved unfortunately that they have really taken to excess. The appetite is impaired, digestion is arrested, dyspepsia follows, sleeplessness is produced, muscular power, especially of the legs, is enfeebled, the organic tissues suffer direct deterioration in their structure and a diseased state is set up in the internal organs. The heart is enlarged, its relative parts being thrown out of proportion, its orifices dilated, its valves stretched, its filamentous cords dilated and its walls thickened. The liver also undergoes structural changes; it becomes enlarged by the production of albuminoid and fatty deposit or by the increase of connective tissue, and finally there supervene contraction and atrophy of the canals and cells, forming that gnarled condition known as "gin-drinker's liver." The kidney is deteriorated by fatty modifications and its

functions are impeded. The minute vessels of the lungs are relaxed and easily congested, and the molecular constitution of their tissue is altered; hence chronic bronchitis is common among those who take much alcohol, while consumption, often unsuspected, but of a most fatal form, carries off hard drinkers in the prime of life. Other organic changes also take place; the crystalline lens and retina of the eye are injured and the sight is impaired, an excess of salts is produced in the urine, and gravel and stone are deposited; indeed, there is not an organ that is unaffected. The brain and spinal cord and the whole nervous system suffer, giving rise to serious derangements which manifest themselves in the worst forms of nervous disease, such as loss of memory and speech, epilepsy, paralysis or insanity. And these derangements, it should be remembered, are more or less transmitted to degenerate offspring. The moral effects are too well known to need description.

Water is indispensable as a component part of food, for it facilitates the chemical changes which take place in the food.

The other inorganic principles which are necessary to a healthy condition of the body are compounds of lime, potash, magnesia, soda and iron, together with phosphoric acid, carbonic acid, chlorine and sulphuric acid. Lime and phosphoric acid are of most importance.

Requirements Vary—The amount of food required varies with different individuals; very much depends on age, sex, climate, season of the year, physical and mental exertion. All vital processes, including the assimilation of food, are most rapid in early life and least rapid in old age. In childhood and youth there is also the necessity for making provision for the growth of all parts of the body, as well as the rapid discharge of functions. Man requires more nitrogenous food than woman. The vital processes are also most active in spring, least so at the end of summer; more energetic in cold climates than in hot, in highlands than in valleys. Exertion always stimulates these processes.

ANIMAL FOOD.

The structure of animal food is identical with that of the human body; hence nothing is required in addition to it in order to maintain life. Its chief characteristic is that it contains a large proportion of nitrogenous material; but with it there is usually mingled, either naturally or artificially, so much fat or other non-nitrogenous material that it is adapted both for the formation of tissue and for the production of heat and other force. Undue importance is given by some persons to animal food, as if that alone really nourished the system and supplied what is required for work and recovery of strength. No doubt it appeases hunger more thoroughly than vegetable diet, and satisfies longer because it is digested in the stomach and that organ gives signs of repletion and retains this

kind of food for a longer time than vegetable food. Animal food is also easily cooked and appears to be more easily digested than vegetable; it increases the amount of fibrin, phosphates and other salts, and the number of red corpuscles in the blood; it produces firmness of muscle, and increases the urinary secretion both in quantity and in amount of effete nitrogenous matter, necessitating the consumption of an increased quantity of fluid. Vegetable food has a tendency to increase the deposition of fat. Mr. Banting found that by lessening the amount of vegetable diet he was enabled to reduce his corpulence; this result might be due not only to diminution of the fat-producing elements, but also to the increased oxydation through the lungs induced by the excess of nitrogenous materials. Physiological considerations and experience teach us that a mixed diet as a general rule is best adapted to the requirements of the body.

Animal food comprises the different parts of animals; eggs, milk and its products.

Comparative Values of Flesh—The flesh of young animals is more tender than that of old, but it is not so easily digested. The flesh of middle-aged animals is more nutritive and has a fuller flavor than that of young. The flesh of old animals, though nutritive, is often very tough. Young and quickly fed animals have more water and fat in their flesh, whilst older and well fed animals have flesh of a firmer touch and fuller flavor and are richer in nitrogen. The former may be more delicate, the latter are more nutritious; animals of middle age, therefore, afford the most digestible and fullest flavored food. The larger the animal the coarser the meat. The flesh of the female is more finely grained and delicate than that of the male. Animals that have been deprived of their reproductive organs are larger, fatter, more tender and form better food than those that have not. During the breeding season flesh is unsuitable for food. The flesh of wild animals has less fat than that of well fed domestic animals, but it has more flavor. The character and flavor of the meat are much affected by the food eaten. The fat of cattle fed on oilcake is yellow; the flesh of sheep fed on turnips has a flavor of the vegetable; that of the mountain sheep is affected by the fragrant herbage on which they graze. Violent exercise just before death makes flesh more tender than if the animal had been quiet. The removal of blood in slaughtering, while it involves waste of nutritive material, improves the flavor of the flesh and renders it more easy of preservation. Hanging the meat improves its tenderness. But the best meat may be rendered unwholesome by decomposition. Low-priced meat may prove very dear, for the animal may have suffered from disease and thus become unfit for human food. Animals that have been saturated with powerful medicines are also unfit for food, since serious disorders are often produced and been known to be suffered by those who have eaten the flesh of cattle so treated.

Good Meat—Good meat has the following characteristics:

1. It is neither of a pale-pink color nor of a deep-purple tint, for the former is a sign of disease and the latter indicates that the animal had not been slaughtered but had died with the blood in it or had suffered from acute fever;

2. It has a marbled appearance, from the ramifications of little veins of fat among the muscles;

3. It should be firm and elastic to the touch and should scarcely moisten the fingers—bad meat being wet and sodden and flabby, with the fat looking like jelly or wet parchment;

4. It should have little or no odor and the odor should not be disagreeable, for diseased meat has a sickly, cadaverous smell and sometimes a smell of physic. This is very apparent when the meat is chopped up and drenched with warm water;

5. It should not run to water nor become very wet on standing for a day or so, but should, on the contrary, dry upon the surface;

6. When dried at a temperature of 112° or thereabout, it should not lose more than from seventy to seventy-four per cent. of its weight; whereas bad meat will often lose as much as eighty per cent;

7. It should not shrink or waste much in cooking.

SALTED MEAT is objectionable on several grounds. Its common use when fresh meat can be obtained is therefore undesirable, and it is unsuitable for invalids. It is deficient in nutritive value and natural flavor, from the extraction of a considerable quantity of the juices of the meat. It is deficient in tenderness and therefore to some extent insoluble by the digestive secretions. It also acts prejudicially on the system by the introduction of an excessive quantity of salt and saltpetre.

BEEF and **MUTTON** are the principal fresh meats. The former is of a firmer and closer texture than the latter, contains more red-blood juices, has a fuller and richer flavor, containing more iron, is more satisfying and more strengthening and makes greater demands upon the digestive powers. Yet it is a common article, not only at the ordinary dinner table, but even in the sick-room. In many cases of illness, if properly cooked, it may be eaten with impunity; but in typhoid fever and other diseases where the bowels are inflamed and tender, it produces, in its ordinary form, injurious effects. Even beef-tea often increases the irritation, keeps up the fever and aggravates the diarrhea; consequently in such cases it should, for the most part, be excluded from the diet list. As beef requires considerable effort on the part of the stomach to convert it into chyme, it is contra-indicated in acute maladies until convalescence has commenced, when by allowing the patient to extract the juice at first, and then swallow a few shreds of the meat, daily increasing the amount swallowed, the digestive organs will be fin-

ally won back to their normal condition and capability. Nevertheless, there is a form in which beef has been most beneficial. Administered in a raw state, when finely divided and reduced to a pulp, it is very useful in some derangements of the stomach. Although not very palatable at first, a taste for it is soon acquired. In this form it has proved very valuable in cholera-infantum and dysentery, when everything else failed. It should be prepared by scraping with a spoon, and seasoning with a little salt.

MUTTON or mutton-broth is much to be preferred for delicate persons. Mutton-broth has less nutritive value than beef-broth, but having a delicate flavor it is preferred by many persons. It is, however, too rich in fat to be easily digested, unless a large portion of that substance be first removed. Lean mutton, then, should be selected for making broth; the scrag of the neck is a suitable joint. When a patient is so far convalescent as to require solids, a mutton chop, properly cooked, is generally most suitable. Broiling should be preferred to frying and to cook mutton-chops nicely a clear fire is absolutely necessary. The chops should be sprinkled with salt and pepper, and placed over the fire for six or seven minutes. They should not be pricked, but should be frequently turned to insure their being thoroughly cooked.

VEAL and LAMB are more gelatinous, less stimulating, less nutritious and less easily digested than beef and mutton. But the character of the flesh varies very much in delicacy, nutritive value and digestibility, according to the mode in which the animal has been killed. Veal-broth is generally prepared from the fleshy part of the knuckle. It is not very palatable, and as it does not contain the nutritious qualities of beef-tea or mutton-broth it is scarcely advisable to introduce it into the sick-room, except for the sake of occasional variety. The lean of a lamb-chop cut from the loin is often a morsel which tempts the flagging appetite.

PORK, on account of its fatness, is not so easy of digestion as other meats. Bacon and ham, however, do not so easily disagree with the stomach; and in this respect they occupy an exceptional position in relation to fat meats and cured meats. Fat bacon, taken with any substances that are rich in nitrogen, is very nourishing. It increases the nutritive value of eggs, poultry, peas and beans. All pork should be most thoroughly cooked, because it is more frequently diseased than any other kind of meat, and the disease, being due to the presence of parasites, is particularly injurious to man. Sucking pig is a great delicacy, but of small nutritive value, and unsuitable for invalids.

VENISON is lean, dark-colored and savory, having more the character of game than of butcher's meat. It is very easily digested, and is therefore suitable to the dyspeptic and convalescent; its rich flavor may, however, constitute an objection to it, and if it has been kept too long before being cooked, it is very apt to produce diarrhea.

GELATINE, which forms the basis of soup, is the nitrogenous principle of bones. They contain a considerable quantity of nutritive matter, but for its extraction they should be broken into small pieces and boiled for many hours. Although investigators have found that gelatine fails to nourish animals when given by itself, it is now a well established fact that, in combination with other substances, it can be turned to account in the system as a force-producing element. In the form of jelly, with or without wine, when not tough, it is readily digested and serves to allay the feeling of emptiness and hunger when more nutritious food cannot be well taken. Being demulcent and possessing no irritating qualities, it proves very useful in inflammatory affections of the bowels. As it is soothing and grateful, it may be allowed where diarrhea is not to be feared. In the preparation of gelatine-jelly it is very essential to soak the gelatine, as procured in the shops, in cold water for some time.

LIVER of the calf, lamb or pig, when fried, is rich and savory, but is not suitable for those whose digestive powers are feeble.

KIDNEYS and **HEART** are as nutritious as lean meat, but are also unsuitable for invalids.

TRIFE, when gently boiled for about an hour, is a food of somewhat delicate and agreeable flavor and of very easy mastication and digestion, but from its fatness is rather rich. The ease and rapidity with which it is digested, and the considerable nutriment which it affords, seem to render it most suitable for the sick, but in practice it is found that the absence of decided flavor, its unsatisfying character and the unusual nature of the food prevent its selection by the sick generally.

SWEETBREAD is easily digested, and when simply cooked is not unsuitable for the convalescent, but when richly cooked will disagree with the dyspeptic and invalid.

HEAD of the ox or sheep, boiled for eight or nine hours to extract the nutriment, makes excellent soup.

OX-TAILS are commonly employed for the same purpose.

TONGUE of all animals, especially of the ox, is a great delicacy, but from its being fat and eaten salted, is not adapted to weak stomachs.

SHEEP'S LEGS, as a bridge from soup to meat, are excellent when well boiled.

SHEEP'S BRAINS are highly commended as a means of conveying phosphates, but are rather indigestible and not adapted to delicate stomachs.

PRESERVED MEAT is not so nourishing as the same amount of properly cooked fresh meat, on account of the over-cooking demanded by the process. It has the recommendation, however, of being much cheaper than fresh meat. It may be rendered more palatable by being minced and warmed or stewed with vegetables,

but to prevent further loss of nutritive properties it is best eaten cold.

EXTRACT OF MEAT should consist of the concentrated essence of the juice of flesh; but a good deal that is sold as such is solidified soup, with the addition of gelatine. Good extract is slightly acid, of a pale, yellowish-brown color, with an agreeable, meat-like odor. It should be perfectly soluble in cold water, and should not contain albumen, fat or gelatine. It is a stimulant rather than a nutritious food. It is deficient in albumen, and, as in the case of soup and beef-tea, its nutritive power must be assisted by vegetables and other substances which are rich in nitrogenous matter. Biscuits are now made combining the extract with a proper proportion of flour. The extract may often prove a fair temporary substitute for beef-tea when there is not time or convenience to make the latter, but it must not supersede it in the sick-room. When taken during fatigue it has been found to be remarkably restorative, increasing the power of the heart, and removing the sense of fatigue following exertion. Mixed with wine, Dr. Parkes states, it has been employed with great success in rousing men in collapse from wounds. It was the means of saving the lives of many wounded men in the Austrian army in 1859, and in the war between the Northern and Southern States. It would, therefore, be useful after surgical operations.

Birds occupy an important place among the sources of food, especially in the diet of the sick-room. Their flesh consists of delicate muscular tissue, without any admixture of fat, being in some cases white, in others dark-colored. The juices are deficient in red blood, and have a more delicate flavor than those of adult animals.

POULTRY, such as fowl, turkey and Guinea-fowl, is white-fleshed, has a delicate flavor, and is tender and easily digested. As the flesh is milder and less stimulating than that of ordinary meat, it is well adapted to those whose powers of digestion are enfeebled. But it is not very nourishing; it contains too little fat and needs pork or bacon to supplement this deficiency. Sexless birds, as the capon and pullet, grow larger, fatten better, and are more tender and delicate than ordinary poultry.

DUCKS and **GEESE** are not so well adapted as poultry for the sick-room, for their flesh is harder, richer and more highly flavored.

Game—Pheasant, partridge, grouse, woodcock, snipe and quail—have a delicate flavor, which improves by keeping (fuller and stronger than that of domesticated birds), is strengthening, tender and easily digested. It is thus tempting to the appetite, and is well adapted to a weak stomach. It therefore forms a valuable diet for the sick-room, and can be taken when other meat and poultry are rejected. But the darker flesh of game requires culinary management to render it digestible.

WILD-FOWL, with its close, firm flesh and strong flavor, is not adapted for dyspeptics and invalids.

PIGEON and smaller birds are usually tender and relishing, and may be eaten with safety by the convalescent.

RABBIT flesh has some resemblance in general and nutritive character to that of poultry. It is somewhat loose in texture, without decided flavor, and is digested with ease. It may be eaten by the convalescent with due caution against unsuitable accessories and condiments.

HARE provides flesh of harder texture, of fuller flavor, and more stimulating nature than that of the rabbit. It is most nutritious; but as it is not very easily digested, it is a food for the healthy rather than for the sick.

FISH is very valuable as food if eaten as soon as possible after capture. There is a prejudice against it from the belief that it has no nutritive value, but this probably arises from the fact that it does not easily satisfy hunger, and is quickly digested, so that the appetite soon returns. It is nevertheless highly nutritious. "Fish-eaters," says Dr. Davy, "are especially strong, healthy and prolific. In no other class than in that of fishers do we see larger families, handsomer women and more robust and active men." Fish, especially white fish, is less stimulating than meat, contains little fat, is easily digested, and therefore forms the most suitable aliment for invalids, dyspeptics and those who suffer from brain-fag. Indeed, in consequence of the large proportion of nitrogenous matter in the composition of fish, abounding as it does in brain and nerve-making elements, it is especially adapted to all those upon whom there are great demands for nervous energy, and is therefore useful in some cases of nervous exhaustion.

The quality of all fish is superior before spawning-time, for it is then "in season." Young fish can always be eaten. Fish caught from the deep seas are better than those from shallow bays. Fresh-water fish from deep, clear water, with a stony bottom, are better than those from muddy shallows.

A sign of the freshness of fish is its firmness and rigidity. For the invalid it should always be boiled or broiled in oil; the fat added in frying renders the fish less digestible. Dried, salted, smoked or pickled fish should not be seen in the sick-room. A little fresh fish, well boiled, served with bread and butter, without sauces and seasonings, may frequently tempt the fastidious, dainty appetite.

SALMON stands pre-eminent as a delicacy, and more nearly resembles the meat of animals than that of other fish; fat is intermixed with the muscular fibre and underlies the skin, particularly of the belly. It is too rich for invalids. The nutritive value of its flesh to those who can digest it is not much less than that of the red-blood flesh of other animals.

MACKEREL, HERRING and **EELS** are also fatty in their composition, and therefore less suitable than white fish for those whose powers of digestion are feeble.

HADDOCK, WHITING, FLOUNDER, COD, TURBOT, etc., are white fish, whose flesh contains little fat, except in the liver. Whiting, the chicken of fish, is the most delicate and easy of digestion. Haddock is firmer, not so delicate nor so digestible. Flounder is tasteless, but also harmless. Cod is close, firm, tough, and indigestible by a weak stomach. Fried cod is like veal-cutlet, but drier. Turbot has richer flavor, but does not stand high as food for invalids. The skin when boiled, appears to be gelatinous, but though preferable as a delicacy for the healthy, is not suitable for the weak.

FISH-BROTH contains nearly the same component parts as meat-broth, and in some countries fish-soups are as much esteemed as those of meat.

ISINGLASS, obtained from the air-bladder of the sturgeon, is a valuable vehicle for the administration of other ingredients of food.

Shell-fish, with the exception of oysters, are less nutritive than other kinds of fish, less digestible, and more likely to disagree with weak stomachs than most kinds of animal food. In some persons they produce gastric irritation and disorders, and in others nettle-rash and similar eruptions; indeed, so marked is this effect on some constitutions that it is necessary to forbid shell-fish altogether.

LOBSTER and CRAB, though very agreeable to many persons, are not suitable for those whose digestive organs are weak, and consequently should not be introduced into the sick-room. Some persons in ordinary health cannot take them, because they are not easily digested, even when stimulants of the gastric juice are added in the form of vinegar and pepper.

SHRIMPS belong to the same family as the lobster, and are somewhat more readily digested, but they are not suitable for invalids.

TURTLE-SOUP is luxurious and rich, and in small quantities at a time is often very restorative to invalids whose digestion is in good order.

MUSSELS and all other shell-fish, except oysters, are not suitable for invalids.

Oysters are nutritious, and readily digested even by delicate stomachs. Recent researches have shown that they are self-digestive. The hard muscle by which the fish is attached to the shell should not be eaten by invalids. They should eat them raw, and masticate well before swallowing. To eat them with vinegar is to commit a dietetic mistake. They should only be eaten from September till May. As a means of conveying phosphates they are invaluable.

Fresh oysters are most grateful in chronic dyspepsia, where nausea is present, in the case of consumptives, for the trouble of morning sickness, and in chronic diarrhea. They can be eaten with

advantage by the nursing-mother, who thus strengthens her own system and also that of the child at her breast. Convalescents from fever will find in the oyster a food both delicate and nourishing.

Oyster-stew, prepared plain or with milk and oyster-essence, made by slowly simmering oysters in their liquor or a little water until they swell, seasoning with salt, straining the liquor, and serving with dry toast or plain biscuits, are excellent methods of giving oysters.

Eggs, if the shell be included, contain everything that is necessary for the formation and maintenance of the body. This food does not, however, exist, as in milk, in a state of perfect solution, but in a semi-liquid form; consequently some digestion is necessary before it can be assimilated. The white of the egg consists chiefly of albumen, without fat and in a condition which admits of easy absorption, the ease being increased if it be shaken or beaten up with water. The yoke contains all the fat of the egg held in suspension by some portion of albumen and is therefore richer than the white. Raw and lightly boiled eggs are readily digested. If the albumen be coagulated by the heat of cooking it becomes heavy and difficult of digestion, and sometimes produces constipation or irritation of the bowels. It should therefore be avoided by dyspeptics and persons recovering from illness, before the full powers of digestion have been regained. If the insoluble portions of hard-boiled eggs are delayed in the stomach and intestines they putrefy and the sulphureted hydrogen and ammonia evolved become irritating to the intestinal canal. But fresh, uncooked eggs are almost wholly free from these objections. A fresh, raw egg, thoroughly stirred into about half a pint of milk, forms, to most persons, a palatable and nourishing article of diet. One great advantage this preparation has over other food is that all the component parts are retained in their natural state, are more completely dissolved and consequently make less demands upon weak digestive powers than when the egg is eaten in its solidified form. If patients object to the taste of raw eggs a little sugar may be added, or if this be not sufficient some simple flavoring extract may be used. Eggs seem to be particularly useful in lung-diseases, and in cases of exhaustive cough seem to act as palliatives.

Egg, with milk and sugar, forms a plain custard, which is often allowable and very grateful.

Eggs undergo change by being kept. The porous shell allows the evaporation of water and the infiltration of air; certain organic changes also occur when the shell is rendered non-porous. To test the freshness of an egg, an ounce of salt may be added to ten ounces or half a pint of water; in this solution a fresh egg will just sink; one that has been kept for several days will float. A bad egg is often sufficiently light to float in pure water. Fresh eggs may also be known by holding them up to the light, when they will appear clear; if stale they will appear cloudy; fresh eggs are most

translucent in the center, stale ones at the end. In order to preserve the freshness of eggs various plans have been adopted to render the shells non-porous, or to exclude air, such as boiling them for half a minute, keeping them in lime-water, bran or salt, or covering them with a coating of wax, oil, butter, gum or varnish; but with only variable success. No musty egg is good for food, even when put into puddings; it should be banished from the house if there be the slightest smell of old straw about it.

Duck's eggs are larger and have a stronger flavor than hen's eggs; the solid matter and the oil in a duck's egg exceeding those of a hen's by as much as one-fourth. They are not often introduced into the sick-room, but there is no reason why they should be excluded if the flavor be agreeable to the patient.

ARTIFICIAL FIBRINE, so called, has been found available when no other food could be taken. It is thus prepared: The white of an egg is poured into cold water and allowed to remain for twelve or more hours, during which time it undergoes a chemical change, becoming solid and insoluble, assuming an opaque, snow-white appearance. This and the liquid in which it is immersed are heated to the boiling point, and the fibrin is ready for use. It is very easy to digest and to many is quite a delicacy. It is said that the stomach will retain this in many cases when everything else is promptly rejected, its presence creating a craving for more food, and thus promoting instead of diminishing digestion.

Milk—Pure milk contains in solution, like eggs, all the elements required for the growth and sustenance of the body. This is especially true in relation to a child. Indeed it may be regarded as the typical alimentary substance, since it contains nitrogenous, fatty, saccharine and mineral matters and water, in the proportions required by the animal economy, and in such a state as to be easily assimilated. In fact, it requires no digestion, and it is this which renders milk a most important and convenient article under many circumstances; it is already digested and prepared for absorption. In fever, pure milk as the main article of diet is far superior to anything else, especially in typhoid and other fevers involving disturbance of the stomach and bowels. Beef-tea, is often irritating, but milk, on the contrary, is soothing, cooling, and at the same time nourishing and strengthening. In chronic disorders of the stomach and bowels, milk-diet is a most valuable accessory to medical treatment. It allows the stomach to have almost absolute rest, which in many cases is all that is required. And this quiescent condition can be prolonged almost indefinitely, since an adult can be sustained for days or even weeks on milk alone. It should, however, be observed that milk would not be a suitable diet for adults in health, as the nitrogenous matter is in considerable excess in proportion to the carbonaceous. It is suited to young persons who have to grow, and who in order to grow must appropriate an excess of what is nitrogenous to form a daily addition to the body. Or

the other hand, it is not so suitable for full-grown persons, who have not so much to form tissue as to develop heat or other force by the combustion of carbon.

The constituents of milk vary in quantity and proportion in different animals, and under different circumstances in the same animal. Woman's milk is, of course, the standard. Cow's milk more nearly approximates to it than that of any other animal and hence is most generally used. Cow's milk contains considerably more caseine or curd, less sugar, and a little more butter than woman's milk. When the former is substituted for the latter it should be largely diluted with water and slightly sweetened. Goat's milk is richer than cow's; sheep's milk still richer. Ass's or mare's milk is much poorer, but much sweeter. Indeed, so large is the proportion of sugar-of-milk in the last that it is fermented into a spirituous liquor, known by the name of koumiss, of value in many cases of consumption, chronic bronchitis and chronic diarrhea.

Cow's milk varies very much in quality. After calving takes place the first fluid secreted differs considerably from ordinary milk, and is termed *colostrum*; consequently cow's milk, for three or four weeks after calving, is not entirely pure nor well adapted for food; it has a somewhat sickly smell, and often acts as a purgative.

The milk of the Alderney-cow is rich in butter; that of the long horns is richer in curd. The milk of young cows is preferable to that of old ones, and as a food for infants the age of the secretion should be less than that of the baby; that is to say, a cow with a calf two months old may do very well to feed a child of four months. The milk first drawn from the cow contains less cream than that which is last drawn; indeed (especially if some time has elapsed between the times of milking), the amount of cream in the latter may be two or three times as much as in the former. The milk of the afternoon is richer both in curd and butter than that of the morning. The food on which the cow is fed considerably affects the quality of the milk; poor diet impoverishes it; strong vegetables, such as turnips, cabbages and onions, flavor it; decayed leaves make it disagreeable; poisonous plants render it injurious; nothing is equal to the fresh pasture of country-fields for securing good milk.

Its quality may be tested by the amount of cream it produces, by its weight, and by its specific gravity. The larger the proportion of cream, the better the milk. A quart of new milk, cooled, should weigh about 2 lbs., 2½ ozs., if it is of fair average quality. The addition of water or an excess of cream lowers the specific gravity. But whether or not the milk be diluted with water, it is not infrequently rendered unwholesome by being put into vessels that have not been cleansed by thorough washing-out with soda. On stale milk, even in minute quantities, a small blue fungus, or mould, very speedily forms, which soon spreads to fresh milk and causes it

to turn sour; hence colic, diarrhea and thrush are occasioned in those who partake of it.

Fifteen grains of soda bicarbonate to a quart of milk prevents it from turning sour and also renders it more digestible.

Milk, though nourishing, does not agree with every one. If diluted with one-third lime-water it will rarely cause biliousness or indigestion and if taken regularly will so strengthen the system as to banish these disorders. It may be taken with acid of some kind when it does not easily digest. When milk is constipating a little salt sprinkled in each glassful will avert the difficulty. When it has an opposite effect a few drops of brandy in each tumblerful of milk will obviate purgation. Milk drunk between meals will destroy the appetite. After meals a tumblerful of pure milk may be drunk. A pint with a biscuit makes a light supper. In fever, in exhausted conditions dependent on loss of blood, and in summer-diarrhea and other inflammatory affections of the alimentary tract, milk may be given scalded with excellent results; this is a sheet anchor in typhoid fever. Owing to outbreaks of fever which were traced to infected milk many persons adopted the precaution of boiling all milk before using it and thus the disease-germs which it may have contained were rendered innocuous. This is a good plan for persons resident in towns.

CREAM consists of the fatty constituent of milk, which, on account of its lightness, rises to the surface when the milk is allowed to stand. It forms the basis of butter. It can often be taken freely when nothing else will remain on the stomach, notwithstanding the abundance of fatty matter. It should always be fresh and may be diluted with water or given pure if desired.

CLOTTED CREAM is produced by heating milk just to the point of simmering, which causes a scum to form with the fatty matter and give it more consistency.

SKIM-MILK is that from which the cream has been removed and being consequently less rich than ordinary milk it can frequently be taken by invalids when the latter cannot.

BUTTER-MILK is what is left after the extraction of butter. It of course contains less fatty matter than skim-milk, but it retains the nitrogenous, saccharine and saline matter and is therefore very nourishing and useful as an article of diet. Unless very fresh it is generally a little acid. It is one of the most refreshing summer drinks that can be taken and is almost always allowable in sickness, especially in fevers with gastric symptoms. It appears to produce a gentle activity of the liver and kidneys, particularly of the latter organs.

CURDS are the caseine and fat of milk combined by coagulation of the milk. They form the basis of cheese. The addition of an acid to the milk sets free the caseine, which is held in solution by an alkali, and causes coagulation.

WHEY is the liquid left after the curd has been removed, con-

taining little caseine and fat but all the sugar and salts of milk. The caseine and fat being absent, there is no fear of curdling in the stomach and thus causing pain or diarrhea. Whey can therefore be taken by many persons with whom milk disagrees. It is not very valuable as nutriment, but it is very digestible, is easily absorbed and is a refreshing drink in the sick-room, especially in inflammatory disorders. Slightly flavored with nutmeg it is very palatable. There is a prevailing opinion that whey causes sweat; hence wine-whey, alum-whey, and tamarind-whey, the milk having been curdled by these substances, are recommended. The method of preparation is given hereafter. In Switzerland whey is supposed to be of value in the treatment of chronic disorders of the abdominal organs.

CONDENSED MILK is milk preserved by the evaporation of a large proportion of its water, and the addition of cane-sugar. It is sold in hermetically sealed tins, in which it can be kept for several years; when the tins are opened it is found in the form of sirup, which will remain good for several days. It is very useful for the diet of invalids, in the making of light puddings, or other food into which milk largely enters. It requires the addition of a considerable quantity of soft water (three parts water to one part milk) to replace what has been evaporated. Being already sweetened, it needs no addition of sugar. Its sweetness renders it very agreeable to infants.

KOUMISS, fermented mare's or cow's milk, has been found very useful in consumption. The Russian plan of making it is as follows: Two teacupfuls of wheat-flour are mixed with one spoonful of honey, one of good beer-yeast, and sufficient milk to form a not too thin paste; the whole is put in a moderately warm place to ferment. When fermentation takes place the ferment is put in a linen bag, and hung in a jar or keg containing sixteen pounds of fresh mare's or cow's milk, covered and allowed to stand till the milk has acquired a pleasant acidulous taste (about 16 to 24 hours, according to the temperature). The butter and cheese particles which float about are now skimmed off, the liquid is poured into another keg and shaken for one hour, after which time it is poured into bottles, corked and put into the cellar. A "cure" requires the product of twelve to fifteen pounds of milk daily; the best season for it is from May to July. The koumiss is taken early in the morning, every hour (a teacupful to a tumblerful at a time), and plenty of exercise must follow.

BUTTER is the fatty portion of milk, obtained by churning the cream or the entire milk. This operation causes the rupture of the envelopes of the fat globules, which then coalesce and become incorporated into a solid mass. Milk yields on an average $5\frac{1}{2}$ per cent. of butter, and milk, for its favorable production, requires a temperature of 60° . When the butter is formed it should be worked and washed with water to remove the caseine, fatty acids and other

ingredients which would prevent its keeping sweet and fresh. Salt is added to preserve it. If sirup be added instead of salt, or sugar with which is mixed a little salt, butter is said to keep better. The exclusion of air also preserves it, and simply covering it with water renewed every day will keep it fresh for a week. But a better plan is that of M. Breon, who adds water slightly acidulated with acetic or tartaric acid and places the whole in a closely fitting vessel.

When pure and fresh, butter is more easily assimilated by delicate stomachs than most other fats. It is also the form of separate fat which is less frequently disliked by consumptive people and invalids generally, but it should not be too bountifully supplied. Butter that has become stale or rancid or been exposed to heat (as for buttered toast), is very likely to disagree with dyspeptics and other invalids and cause diarrhea. Indeed, as a rule, all decomposing fats disagree with the stomach. There are ready means of detection through the senses of sight, taste and smell, when butter is adulterated. Pure butter should be of a uniform rich yellow appearance; when a streaky look is imparted by quickly passing over it a clean knife the presence of adulterants is always to be suspected. When melted it should yield a clear-looking oil, with but slight deposit of water or other substances. When placed on the tongue it melts quickly and leaves the tongue perfectly smooth; while, on the contrary, there will be a sense of roughness, a granular taste and the peculiar flavor of the adulterant as the results of this test when butter is adulterated. None of these tests are of value in oleomargarine adulteration. The odor of butter is very persistent and therefore does not so well mark its purity or the reverse.

CHEESE is the nitrogenous portion (caseine) of milk, with a proportion of fatty matter, obtained by coagulation into curd by means of rennet or vinegar. The curd is subjected to pressure in a mould, of the future form of the cheese, in order to remove the whey. When sufficient consistence has been secured the cheese is exposed in a cool, airy situation to dry and ripen. During this process both caseine and butter undergo change, volatile, fatty acids are produced, flavor is developed, and in some cases fungi are formed. The rich and soft quality of the cheese depends on the amount of fatty matter in the milk from which the cheese is made; the richer cheeses are formed by the addition of an extra quantity of cream; the poorer cheeses are made from skim-milk. Poor, close cheeses keep the best.

As cheese is rich in nitrogenous matter, it stands very high in the scale of nutritious food; one pound being equivalent to three and a half pounds of lean beef. Taken with bread or other vegetable diet, it is very nutritive to persons of active habits. As a relish or condiment it stimulates digestion. But on the whole it is not very digestible and therefore not suitable for persons of sedentary habits or invalids, especially at bedtime. The close, poor cheeses are less easily assimilated than the soft, brittle and strongly flavored,

but they may be rendered wholesome by being cut in very thin slices and buttered. Toasted cheese is also digestible by a healthy stomach, if it be new and lightly cooked with cream and butter; but as ordinarily prepared it is one of the most indigestible articles than can be eaten.

CREAM-CHEESE is fresh curd moderately pressed; it must be eaten fresh, as it will not bear keeping long. It is more digestible than ordinary cheese because it is softer and may be readily masticated and because it has a less proportion of caseine. To many invalids it will prove a pleasant variation from other diet.

LARD, which is derived from the loose fat of the pig, is a very pure fat; but it is so tasteless as to be seldom eaten except in pastry, or as the medium in which substances may be fried.

DRIPPING, derived from roasting joints, if not burnt, is one of the most nutritious forms of fat, and very agreeable. Its flavor depends on the degree to which the flesh is roasted. It may sometimes prove a welcome alternative to butter in the sick-room. Salt should be eaten with it. But it must be taken in moderation, and its action watched, or it will disorder the stomach and heighten fever.

VEGETABLE FOOD.

Vegetable products enter largely into the food of man. Even the more common articles of food of this class present considerable variety. They are consumed in the form of seeds, roots, leaves, herbs and preparations of different kinds.

Farinaceous seeds, the largest portion and most extensively used of vegetable foods, are of great nutritive value, easy digestion, plentifully yielded and universally grown.

Cereals hold the first place. Their general composition is similar, but on account of different proportions of their component elements they have different nutritive values. Even all wheat is not exactly alike, especially in the relative proportions of nitrogenous matter and starch. On an average, wheat contains more nitrogenous matter than other grains. Oats come nearest to wheat in this respect, and are of equal value to many wheats; they also contain a large proportion of fats and salts. Maize is rich in fatty matter, moderately so in nitrogenous, but poor in salts. Rice is very rich in starch, but poor in other constituents.

Wheat—The constituents of wheat more nearly correspond with the requirements of the human system under ordinary circumstances than those of any other grain. Life and health can be maintained on wheat, good water and air for an indefinite period.

As ordinarily used, wheat is deprived of much of its nutritive value. The portion containing the largest amount of nitrogenous matter is removed to secure whiteness in the bread. Each grain,

after being thrashed out of the straw and winnowed from the husks is composed of a hard, thin, outer coat, or bran, a soft, brittle, intermediate layer of cells, and a central white substance chiefly composed of starch. The outer coat is woody, indigestible, useless for nutrition and irritating to the alimentary canal. In some cases it may be advisable to retain it, to act as a mechanical stimulant to the intestines in constipation. It is too stimulating for persons who take active exercise since it causes the food to pass hurriedly through the canal before disintegration and assimilation are completed. For invalids, and persons with feeble digestive organs, it is too irritating. The inner coat is of most value, since it is the richest part of the grain in nitrogenous matter, fats and salts—the food for muscle, bone and brain. The more thoroughly this is removed, the finer the flour is dressed, the whiter the bread produced, the less nutritious is the bread. The central, white material of the grain, chiefly of starch, comprises also some of the more nourishing elements, though the proportion is so small that the nutritive value of the grain is sacrificed to the appearance of the bread. Many writers—notably Liebig—have pointed out the waste of nutritive material in white bread, and the folly of preferring it to that which contains the nitrogenous portion. Pavy, however, has shown that bread is not the only food; that what is rejected in the bread is taken in other forms; and that through animal diet the very elements which have been eliminated from the flour are replaced. To most persons white bread is more palatable and presents a more pleasing appearance, than the more nutritious bread, but this taste is probably the result of habit. But for the resulting dark color and soft consistence, a very important, soluble, nitrogenous matter, called cerealine, might be utilized by soaking the bran in warm water for some time and using the water in the preparation of the dough for bread. It would be better to sacrifice the appearance to more nutriment. Young and growing children unconsciously suffer greatly from the common custom. They become badly nourished, grow up with defective teeth and bones, weak tissues and inadequate muscular development, and are peculiarly susceptible to disease from resulting lack of vitality.

Bread made with sea-water increases the appetite and stimulates digestion. It has an agreeable flavor, and exercises a beneficial influence in dyspepsia, consumption and scrofula.

STALE BREAD is preferable to new, especially when weakness of the digestive organs is present. The softness of new bread renders it less easy of mastication and insalivation, more clammy and cohesive, and therefore less penetrable by the gastric juice. In the stomach it often ferments, and even in persons of good digestion produces heartburn. Stale bread is firm and more brittle under the action of the teeth, and more easily penetrated by the digestive juices than new bread. Bread is most digestible one or two days after it has been baked. The best bread grows stale most slowly.

AERATED BREAD, made by forcing pure carbonic acid into the dough, keeps better than other kinds, is free from remains of yeast, does not induce the fermentative changes in the stomach which cause dyspepsia, flatulence and heartburn, and is more likely to be wholesome than ordinary baker's bread.

SOUR BREAD and mouldy bread are unwholesome and may produce injurious and even fatal consequences. As bread is poor in fat and salts (when only white flour is used), the common practice of eating butter, bacon, dripping or other fat with it is, therefore, more than the gratification of a taste; it is a physiological necessity.

TOASTING BREAD generally increases its digestibility, provided the process be properly carried out. To cut the bread into slices so thick that while the sides are rendered crisp the interior becomes spongy, and then to soak the whole with butter, is to render toast very indigestible. The slice should be toasted brown, not burnt, so that it may be crisp and firm throughout. It then constitutes the best form in which starchy food can be given, for much of the starch is changed into glucose by the heat, and in wheat-bread there is some little gluten which partly supplies the place of albumen. Toast should be buttered as eaten, so that it may not become soaked with butter. By some it is much enjoyed without butter, and is then more readily digested. Toast-water, when properly prepared, forms an almost indispensable article in the sick-room. If good, stale bread or biscuits be nicely toasted, not burnt, and then placed in a dish or jug, and hot water poured on and allowed to cool, the drink will often prove more palatable than water alone.

RUSKS, ZWEIBACK and **PULLED BREAD** are forms of toast. Rusks and zweiback are made of flour, butter, milk, eggs and sugar, baked and dried. Pulled bread consists of the interior only of a new loaf from which the crust is stripped, dried and browned in a quick oven, and constitutes a suitable form of bread for those whose digestion is weak.

BISCUITS and **RUSKS** are not likely to become mouldy and unwholesome. Biscuits have this further recommendation, that as they contain little water, they are, bulk for bulk, more nutritious than bread, three-quarters of a pound being about equal to a pound of bread. Those made without butter are sometimes not easily digested and patients soon tire of them from lack of variety.

WHEAT BISCUITS, either sweet or plain, are made of whole wheat finely ground for the purpose and are most suitable for those who suffer from dyspepsia and constipation. They are not cloying and indigestible like brown bread new, nor dry and husky like brown bread stale, but are sweet and agreeable to the palate. They may be used either at tea and breakfast or with meat at dinner, as the consumer pleases, and in such quantities as may be requisite.

BISCUIT-POWDER, made from captain's, or ship's biscuits, which consist of flour and water only, and prepared with milk, can be

sometimes taken by invalids who cannot bear solid food. It is also suitable for infants.

CRACKNELS are light and easily digested.

SPONGE-CAKES are also light and often tempting. They may be soaked in hot milk, as also may rusks and cracknels.

MUFFINS and **CRUMPETS** are very indigestible.

GINGERBREAD, when dry, crisp and light, is acceptable to many dyspeptics.

MACARONI and **VERMICELLI** are very nutritious, but not easily digested on account of the closeness of their texture.

SEMOLINA is made from the inner part of the wheat-grain, is nourishing and digestible, and is useful for puddings, or to thicken soups, broth or milk.

Oatmeal—Oats, when ground, form a flour which is not so white as wheaten flour and when made into bread has a peculiar taste, half sweet, half bitter. On account of the large proportion of fats and salts contained in them, oats form a very nutritious food. When deprived of their covering, oats are known as groats or grits; when crushed, they are in the form best adapted for gruel. Groats and milk furnish perfect nourishment, even for an adult. Oatcake-bread, in large, thin flakes, is a common article of diet in Scotland, and in some parts of the north of England.

PORRIDGE is a hasty pudding of boiled oatmeal. The oatmeal should be mixed, at first very thin, in boiling water or milk; while boiling, the meal should be sprinkled slowly on the surface and stirred in; when enough is added, the whole should simmer for half an hour or longer, with an occasional stir. If, however, the oatmeal be imperfectly boiled, as when prepared in haste or intentionally unboiled, it is extremely indigestible, and produces obstinate water brash and flatulence; but if well boiled, and eaten slowly so as to become thoroughly mixed with saliva, it is most wholesome.

GRUEL is a similar preparation, taken in a more liquid form. It should be boiled until every particle of the meal is cooked. It may be made with milk instead of water, or part water and part milk, and is generally better if strained, as the straining removes the irritating husks of the grain. Gruel appears to have been a favorite morning-beverage some two hundred years ago, for water-gruel was advertised as always ready at the Marine coffee-house in Birchin Lane, Cornhill, London, every morning from six to eleven o'clock, where as much as four to five gallons were drunk daily. This is a more innocent stimulant than that which finds favor with the revelers of the present day.

In North Germany, oatmeal-soup mixed with fruit is a favorite dish, the fruit greatly augmenting the nutritious value of the oatmeal. In Ireland oat meal is mixed with Indian corn-meal, and then stirred into boiling water, forming a compound called stirabout.

Whey and milk are often used instead of water. The mixture should be well boiled to avoid flatulence.

Oatmeal in all its forms is somewhat laxative, and often causes bowel irritation, especially when not sufficiently cooked. Some persons suffer from acidity and eructation when using it.

Barley is not so much employed as it used to be in the form of bread. When it is made up, some wheat flour is mixed with the meal to make it less compact and heavy, more spongy and light. It is, however, less palatable than wheat bread, less digestible, and is scarcely suitable for weak and disordered stomachs. Barley-flour is the best eaten in the form of gruel or stirabout, made by gradually sprinkling or stirring the meal into boiling water. The nutritive value of barley-meal is somewhat inferior to that of wheaten flour. Barley meal is cheaper than flour and it is almost the cheapest article of diet.

SCOTCH BARLEY is the grain deprived of its husks.

PEARL-BARLEY is also the grain deprived of its husks, and rounded and polished by attrition. Both are employed to give consistence to broth.

PATENT BARLEY is pearl-barley ground into flour.

BARLEY-WATER is made from pearl-barley, and forms a slightly nutritive, bland and demulcent drink for invalids. It is made by taking about two ounces of pearl-barley which has been well washed in cold water and boiling it in a pint and a half of water for half an hour.

MALT is barley changed in process of manufacture, so that a peculiar, active, nitrogenous principle, called *diastase*, is developed, which has the power of converting starch into dextrine and sugar.

AN INFUSION OF MALT is made by boiling four tablespoonfuls of ground malt in a pint of water for ten minutes. The liquid is poured off, diluted one-half with milk or given pure. It is very agreeable and nutritious and is often beneficial in some cases of cholera-infantum when other things are rejected. Malt is one of the ingredients of Liebig's Food for Infants.

Rye is more like wheat than other cereals, in its fitness for making bread; but it is not so nutritious as wheaten bread, while its color and acidity often render it distasteful to those who can obtain wheat flour. It is slightly laxative.

Indian Corn, or maize, is not well adapted for the manufacture of bread on account of its deficiency in gluten, unless wheat or rye-flour be mixed with it. The meal is cooked by either baking it in cakes or by stirring it into boiling water or boiling milk as with oat-meal, by which a thick porridge is made. It is commonly flavored with salt, butter or molasses. The large proportion of fatty matter renders it very nutritious.

Rice is the food of nearly one-third of the human race. The best comes from Carolina. It is useful as an article of diet, whether whole or ground into flour. It, however, requires the addition of

some fat to make up for its deficiency in this ingredient. It should be thoroughly cooked whether the grains be ground or remain whole. In India, rice is never prepared alone, but always with the addition of a certain pulse which abounds in albuminates; ghee (butter clarified by boiling) is also largely consumed with it. Boiled or baked with milk and egg, as rice pudding, it forms a substantial meal and is especially suitable for invalids as it does not make great demand on the digestive powers. Rice boiled five or six hours forms, on cooling and after the water has been strained off, a jelly which is soluble in warm milk and makes a pleasant change of diet. Rice-water is made by washing an ounce of good rice in cold water, then steeping it for three hours in a quart of water kept at a tepid heat and afterwards boiling it slowly for an hour.

RICE WATER is very useful as a drink in all irritable states of the alimentary tract, as in dysentery and diarrhea. Indeed, it has been known to arrest the latter without the employment of any medicinal measures.

Vegetable Food—Dr. Chambers has classified garden products according to the chief purposes they subserve in the animal economy. The place of each plant in the class indicates its average value; for instance, the potato stands first in value for its starch; cabbage as an anti-scorbutic. The classification is useful as indicating what should be eaten or avoided in certain diseases.

1. **STARCHY AND SUGARY PLANTS**—Potatoes, yams, chestnuts, beans, peas, Jerusalem artichokes, carrots, parsnips, beets, salsify, turnips. Each of these is a force-giver, but may prove unsuitable food in some disordered conditions.

2. **STIMULANTS**—Asparagus, wild onions, artichokes, strong onions, garlic, aromatic herbs, mustard, cress, and a few other pungent salad materials. These cause increased secretion of saliva and gastric juice, and thus promote the digestion of a larger quantity of food than could be otherwise dissolved.

3. **ANTI-SCORBUTICS**—Cabbages, tomatoes, and salad materials in general. These products contribute valuable saline materials to the blood; but they should be quite fresh or they will cause indigestion, and must be scrupulously clean, otherwise they will be the instruments of introducing parasites into the system.

4. **DILUENTS**—Cabbages, spinach, turnip-tops, winter-greens, cauliflower, sorrel, nettle-tops, or any leaves sufficiently palatable to eat, soft to swallow, and green when boiled. The chief use of these diluents—or perhaps they might as appropriately be called disintegrants—appears to be, not to contribute actual nutriment, but by being mixed up in the stomach with nitrogenous food, to render it more thoroughly open to the action of the digestive secretions, and more easily absorbed by the intestinal glands. Though apparently not nutritious in themselves, they make other things nutritious.

PEAS consumed while yet young without their pods form a very delicate and nutritious vegetable if they are so young that their skins crack in boiling and are quite tender. Unbroken skins become harder the longer they are boiled and are very indigestible. Old peas should be treated as dried peas—soaked, stewed and crushed—if they are to be rendered palatable and digestible. Dried peas, split peas, without skins, if well boiled, are excellent food for healthy persons. Peas-bannocks, or cakes made from the meal, are a favorite food, with fat and milk, in the southeast of Scotland. Peas with fat bacon or butter, have long been a favorite food.

Nuts—The walnut, hickory, pea-nut and pecan contain oil; so also does the hazel-nut, whether the variety be the filbert, cob-nut or Barcelona-nut; the Brazil-nut is very rich in oil; the cocoanut contains about 70 per cent. of a fixed fat, which is extracted and used under the name of cocoanut oil or butter. All these nuts are highly nutritious on account of the albumen and caseine they contain, but they are not easily digested on account of the large proportion of fat. They should be taken in extreme moderation at a time when the stomach has had some rest and can employ its powers for their digestion. They should be very thoroughly masticated so that the saliva may act freely throughout the mass; they may then be taken by those whose digestion is good, but must be avoided by invalids. Under exposure to the air the constituent oil is liable to turn rancid.

ALMONDS are of two kinds. The bitter almond contains elements which, when brought in contact with water, develops poisonous products, and consequently, when employed for flavoring puddings, cakes and liqueurs, has proven injurious and even fatal. The sweet almond is not injurious. On account of its irritating qualities the skin should be removed by soaking the almond in warm water before the kernel is eaten; this may then be taken by those whose digestion is good. If it be baked for a little while it may be easily broken and pulverized and thus rendered more digestible. Biscuits made of almond-flour have been found useful in diabetes and in most cases of defective nutrition, on account of richness in nitrogenous and fatty elements.

Starch is also an important alimentary product, found very extensively distributed in the vegetable kingdom. As an article of diet it is useful in the formation of fat and force, but is devoid of nitrogen. It allays the sense of emptiness and hunger when other food cannot be taken. But the granules are covered with a hard envelope which renders them difficult of digestion, unless the envelope be burst by the action of heat. If they be eaten uncooked, they pass through the canal without yielding up their nutritive properties. If, however, they be boiled, the envelopes are ruptured and the contents are easily transformed, either by the saliva or the intestinal juices, into sugar and are thus easily assimilated through the mucous membranes. All preparations of starch should there-

fore be cooked before they are eaten, by stirring them into boiling water or boiling milk and then letting them simmer for a few minutes. If they be prepared with milk instead of water, wine should not be added.

SAGO, prepared from the pith of a species of palm, is useful for thickening soups and making light puddings which, with the addition of milk, form a light and easily digested diet for the invalid.

TAPIOCA prepared from the root of the cassava, is similarly employed and similarly used.

TAPIOCA-JELLY makes an allowable and pleasant dish. The tapioca should be soaked in cold water for several hours and then cooked until perfectly clear, adding more water if necessary. When done, sweeten to taste and flavor with vanilla, lemon or wine, and when cold eat plain or with cream.

ARROW-ROOT possesses little nutritive value and little sustaining power; its chief merit is that it is bland and easily taken, but some other alimentary substance should be added to it. The true arrow-roots (Bermuda, Jamaica and West Indian) are to be preferred for the sick room, for they will often remain on the stomach of an invalid when the others will be rejected.

Potatoes—Of the vegetable products containing a large proportion of water, which makes them succulent, potatoes take the lead in importance and dietetic value.

POTATOES are an agreeable, wholesome article of food, easily cultivated, easily kept, easily cooked, not always easily digested, but not quickly palling on the taste. They are anti-scorbutic. In this quality cabbages take the first place, and all succulent vegetables share, but potatoes have repeatedly proven of value in the prevention and cure of scurvy.

The proportion of starchy constituents is large, and of nitrogenous elements small, so that it is desirable to supply the deficiency in nitrogen, by meat, fish, bacon, buttermilk, etc. When cooked the heat employed coagulates the albumen, the starch-granules absorb the watery particles, swell and burst their cells, and thus the mass is broken down into a loose, floury or mealy condition. If, however, the absorption be incomplete and rupture of the cells imperfect, the mass remains coherent, firm and waxy. In the former state the potato may be easily digested; in the latter it is difficult of digestion. Young potatoes being close and firm are very indigestible, but old, waxy potatoes are more so.

Preparation for the Table—The best method of cooking potatoes is by steaming them in the skin; by this process heat penetrates everywhere and there is no loss of material and salts. For this purpose, a saucepan, one-fourth full of boiling water, is required, into which a closely fitting steamer is placed containing the potatoes, the latter being so packed as to allow a free passage for the steam. If the potatoes are boiled, the skins should not be previously

removed, or a large amount of salts will pass out. The addition of common table-salt to the water is advantageous, for it helps to retain the natural salts. The boiling should be thorough, otherwise the starchy grains are undigested. From twenty-five to thirty-five minutes is the time usually required, according to the kind of potato boiled. Potatoes should be served up immediately they are cooked, and not, as is too frequently the case, placed over the fire an hour or so before meals. Old potatoes are improved by being peeled overnight and put into cold water, by which process they regain, in a measure, their natural color and consistency. Potatoes are rendered more digestible by being finely mashed and mixed with a little red gravy as it runs from the cut surface of a joint.

Roasted potatoes are more nutritious than boiled. Potato soup is rendered more nutritious by the addition of peas, and potato-food by being mixed with cheese and curds.

Potatoes are spoiled by germination or growing, and by frost; severe frost almost invariably kills them, so that when the thaw comes the process of putrefaction immediately sets in.

Choice of Potatoes—They should be large and firm to the touch, should present no evidence of disease or fungi, should not have been exposed to frost, neither should they be germinating or growing, for then the starch is undergoing a saccharine change. Further, when cooked they should not be close, watery or waxy, but floury or mealy.

JERUSALEM-ARTICHOKE is a vegetable somewhat similar to the potato, but does not become mealy when boiled. It is devoid of starch, but contains a considerable proportion of sugar; it therefore does not become brittle, but is sweeter than the potato. It is not largely used as an article of diet, though it has the recommendation that it can be kept in the ground through the winter and dug up when required, without injury from frost. It is not very nutritious nor very digestible; it should therefore only be eaten as an occasional change on account of the flavor.

CARROTS are apt in some cases to produce flatulence. The less they have of the central, yellow part, and the more of the outer, red part, the better. Carrot-pap, prepared from the juice of the root without the indigestible fibre, has been recommended for scrofulous children and adult dyspeptics.

PARSNIPS possess the same general character as the carrot. Being sweet, they are well adapted for children's use, but should be avoided when old and stringy.

TURNIPS contain a very large proportion of water (91 per cent. according to Dr. Letheby), are of little nutritive value, and more difficult of digestion than carrots or parsnips. Young turnip-tops gathered in the spring are often used as "greens."

RADISHES are usually eaten raw and often prove indigestible.

Greens—The leaves, shoots and stems of some plants are valuable for food, chiefly on account of the salts they contain, and

because they give variety to the diet. They should generally be grown quickly, in order that woody fibre may be less abundantly formed, and without much light, that the characteristic properties may not be unduly developed. Green vegetables are always more or less relaxing. They are consequently useful when the bowels are constipated and must be altogether avoided when diarrhea or dysentery is present. They possess a high anti-scorbutic value. In all cases they should be eaten as fresh as possible, for with every hour's delay after they have ceased to grow they become less digestible. When sprinkled with water after they have been kept, they may look well, but never regain their early freshness; hence they often ferment in the stomach and cause flatulence.

CABBAGES, CAULIFLOWER, etc., are of the same general character, but as the proportion of water in their composition is very large they are not very nutritive. Moreover they are not easy of digestion and therefore not suitable for dyspeptics, while the large proportion of sulphur they contain causes disagreeable flatulence. Cabbage, however, is a most valuable anti-scorbutic, but if fermentation has begun its virtue is destroyed. The best sorts of cabbage are the old, white garden variety and the summer cauliflower. They should be soft but crisp before being cooked.

SPINACH is wholesome, and somewhat laxative.

RHUBARB is eaten as a fruit rather than as a vegetable, but must be cooked in order to render it eatable. As it contains oxalate of lime, it should be avoided by those who are subject to gravel.

CELERY is sweet and mild when cultivated, and is much appreciated by certain delicate stomachs if eaten in moderation. Stewed in beef-gravy it makes a delicious and wholesome soup.

GREEN ARTICHOKE, which is the flower-head of a species of thistle gathered before the flower expands, is a delicate vegetable and when boiled till it is quite soft may be eaten freely by invalids.

ASPARAGUS is a young shoot gathered before it expands. It should be eaten as soon as possible after being cut, as it is then most wholesome. The greenest heads are to be preferred, as they contain the largest amount of the peculiar principles of the plant. There need be no fear that they will prove injurious to the kidneys, as some persons suppose. Rheumatism has been cured by eating freely of this plant, and chronic cases of rheumatic gout and gravel are often much benefited.

ONIONS are very wholesome vegetables, whether eaten raw or stewed, or roasted; they are too strong, however, for invalids when they have not been cooked, as they possess strongly irritant and stimulating properties. They are sufficiently mild and sweet for ordinary diet, especially if they are boiled in two or three waters. Onions act as anti-scorbutics, and to some as a laxative.

LEEKS should be white, and have little smell; they are then soft and good, and very digestible.

LETTUCE is agreeable, cooling and digestible as a salad; the juice is mildly sleep-inducing.

WATER-CRESS and mustard form wholesome salad.

CUCUMBERS are often eaten raw and quite fresh, and are very indigestible.

SQUASHES AND PUMPKINS contain much water, but little nutriment; they are easily digested.

MUSHROOMS, generally eaten after being stewed, sometimes disagree with those who take them; nevertheless to most persons they are not injurious, though by dyspeptics they are best avoided, for sometimes they cause colic, vomiting and purging. Forced mushrooms are sometimes tough and indigestible; those grown in open pastures are by far the best. It is not always easy to distinguish mushrooms from poisonous fungi, so that some caution is desirable in gathering and preparing them for food. A meadow mushroom should peel easily and it should be of a clean, pink color inside, like a baby's hand, and have a frill or "curtain" (as botanists call it), attached to the stalk. When the gills are brown they are growing old and dry, and losing their nutritive qualities.

VEGETABLE BROTHS, made of any of the ordinary market-vegetables in season by boiling and straining, are useful as substitutes for animal foods when the latter are not allowed. Out of season, dried vegetables may sometimes answer the purpose. In preparation of these, and in all other cookery for the sick, as far as possible, non-metallic surfaces only should be allowed to come in contact with the materials employed. A simple method is to put them into an ordinary basin or bowl, placing this in a saucepan of water and covering the basin with a saucer. The water in the saucepan is made to boil, and thereby the food is duly cooked.

Fruits are agreeable and refreshing, but as their proportion of water is high and of nitrogenous matter low, they are of little nutritive value. When taken in moderation they are very wholesome, counteracting the unhealthy condition which attends a diet of dried and salted provisions and promoting a somewhat relaxed state of the bowels. Fruit should not be taken, as is the custom, after a substantial dinner. It is best eaten in the morning as a lunch, with stale bread and a little water. When consumed in large quantities fruit is injurious, particularly if it be unripe or over-ripe, in the former case by the action of the fruit-acids, in the latter by fermentation and decomposition. Fruit is very beneficial to gouty and rheumatic subjects, because the alkaline vegetable salts become decomposed in the system and diminish the acidity of the urine, but all patients should avoid acid fruits if there is diarrhea present to contra-indicate their use. The seeds of all fruits and vegetables, if swallowed, prove more or less irritating to the intestines and in inflamed or ulcerated conditions may do irreparable mischief.

APPLES when raw are not easily digested, but when cooked are light, digestible and wholesome. Roasted apples are somewhat

laxative and may be eaten to counteract constipation. The skin and core should be rejected.

PEARS when ripe are more digestible than apples, but as they decay sooner, they are more likely to produce derangement of the bowels. If they are sound, juicy and soluble, they may generally be taken without danger.

ORANGES are among the most agreeable and useful fruits for the sick-room; exceedingly grateful and refreshing, and less likely to cause disorder than most other fruits. A heavy orange, with a fine thin rind, is usually the most juicy and best adapted for the invalid. Old oranges, with many seeds in them, are not so valuable.

THE LEMON is too acid to be eaten alone, except that its juice is grateful, refreshing and beneficial in rheumatic affections; but in the form of lemonade it makes a cooling and wholesome drink for all occasions. Lemon-juice is very valuable as an anti-scorbutic; so also is lime-juice. Lemon is elsewhere recommended as an addition to tea.

PLUMS are less wholesome than most other fruits, though this objection to them is lessened by cooking them. They produce colic and diarrhea and are employed occasionally to promote relaxation in cases of constipation of the bowels.

CHERRIES also, when unripe or over-ripe, disorder the bowels.

PEACHES, NECTARINES AND APRICOTS are luscious fruits, when quite ripe, yielding a delicious pulp for the refreshment of the invalid; the skin should be rejected.

GRAPES are most refreshing, wholesome and nutritious in the sick-room, when ripe and not decayed, the skins and seeds being rejected. They may be safely taken and if eaten freely are somewhat diuretic and laxative.

RAISINS contain more sugar and less acid than ripe grapes; they are consequently more nutritious, but less cooling to the parched mouth of a feverish patient. If eaten too freely, especially if the skins or seeds be swallowed, they are apt to disorder the stomach. Those allowed to dry on the vine are the best, because the quality of raisins is determined by their softness and plumpness and the absence of mites. If these be present, the quantity of sugar, which constitutes the value of the fruit, is lessened, and instead thereof, feculent remains and carbonic acid are present.

GOOSEBERRIES and CURRANTS (red, black and white) are wholesome, cooling, useful fruits, refreshing and laxative in the sick-room; but together with raspberries are generally interdicted in acute diseases.

CRANBERRY, BARBERRY, BILBERRY and ELDER-BERRY are too acid to be eaten raw; the first three are made into preserves, the last into wine.

STRAWBERRIES constitute one of the most delicate, luscious and refreshing of summer fruits and may as a rule be taken by

invalids except when diarrhea is present. The RASPBERRY too is agreeable and wholesome. So also is the BLACKBERRY when in fine condition. The MULBERRY is more acrid, and very grateful to fever patients; but the juice only should be taken.

THE MELON is a rich, delicious fruit, but not infrequently disagrees with those whose digestive powers are weak.

PINE-APPLE should not be eaten by invalids; the pulp should be rejected if the juice be taken.

FIGS are sweet and nourishing; the pulp may be eaten by invalids, but if eaten too freely will irritate and disorder the bowels; the skin is rather indigestible.

TAMARINDS are cooling and laxative, and when mixed with milk to produce tamarind-whey, form an agreeable drink in fevers.

Of OLIVES, the so-called Spanish are the best, being soft, pulpy and oily. Olive-oil is regarded by M. St. Cyr as the most digestible of fatty foods, even more so than fresh butter; it should, however, be thoroughly good, pale, clear and free from rancid smell to justify this estimate. Lucca-oil with its nutty odor is the best.

Gum is the solidified juice which exudes through the bark of trees. Gum-Arabic, which flows from the acacia in Arabia, Egypt, etc., is what is usually employed in the preparation of drinks. In its preparation clear gum should be selected, washed in cold water and then slowly dissolved in cold water. When made of the powdered article or with hot water the flavor is less agreeable. When flavored with a little sugar it is a refreshing and nourishing beverage for invalids. Mucilage differs from gum-water in containing a larger proportion of gum. It is admirably adapted for use in inflammation of the mucous membranes generally, as in catarrh, bronchitis, etc.

Sugar is an important alimentary product, chiefly found in the vegetable kingdom. It also exists in the animal economy, and is there known as the sugar-of-milk. The vegetable sugar exists chiefly in two varieties—cane-sugar and grape-sugar. Cane-sugar is very sweet, and crystallizes easily and though usually extracted from the cane is also obtained from the beet and is found in other vegetable forms. Grape-sugar, or glucose, is inferior in sweetness and crystallizing power and abounds in grapes and other fruits and vegetables. It may also be obtained by chemical change from cane-sugar, starch, gum, etc. It is chiefly used to adulterate cane-sugar. Sugar is valuable from a dietetic point of view, not only as rendering more palatable many articles of food, but also as productive of fat and force. As it is readily dissolved and diffused, it requires no preliminary digestion in order that it may be absorbed through the mucous membranes. In ordinary cases it does not, therefore, occasion any gastric derangement; but when taken in excess, or by some dyspeptics, it is liable to undergo acid fermentation and occasion acidity and flatulence. Sugar-of-milk, however, does not undergo this change. Coarse, brown sugar always contains dirt,

sand and occasionally mites; indeed, from handling it grocers get *psoriasis palmarum*, or grocer's itch, a very troublesome skin-affection. Loaf-sugar and sugar candy are the most free from adulteration. It should be borne in mind that sweetened food is apt soon to cloy the appetite of invalids and that attention must be directed to what is savory to secure agreeable change.

MOLASSES is the uncrystallized residue drained from refined and raw sugar.

GOLDEN SIRUP is molasses purified by being reboiled and filtered through animal charcoal. If largely taken, these products are laxative. They are appropriately taken with all kinds of farinaceous food, such as bread-pudding, porridge, etc.

HONEY is a concentrated sugar mixed with odorous, coloring, gummy and waxy matters, gathered from flowers by the bee for its own consumption, but undergoing some modification by the secretions of the insect. It is of the same dietetic value as sugar, is slightly laxative and is often used in the sick-room as a demulcent and emollient.

MANNA is the solidified juice of some species of ash, containing a peculiar saccharine principle—sweet, odorless, crystallizable, white—but differing from sugar in that it does not undergo alcoholic fermentation when brought into contact with yeast. It is nutritive but is chiefly used as a mild, safe laxative.

Condiments—Such condiments as vinegar, salt and pepper make food more tempting to the palate, stimulate a flagging appetite and sometimes create an unnatural one. The constant presence of salt in the secretions and in the blood indicate its importance as a food. This is evident in the instinctive desire of animals and man, craving for it when it is not supplied in sufficient quantity. It is essential to the maintenance of health, and must not be forgotten in the diet of the invalid. Pepper, mustard, horse-radish, ginger, allspice and nutmeg, etc., are constantly mixed up with food, and there is scarcely a dish which does not contain more or less of these substances. Cooks cannot leave each individual to season his food as he may prefer.

Many cases of dyspepsia and chronic inflammation of the stomach are caused by condiments. When taken in immoderate quantities, they cause an unnatural flow of the blood to the stomach, which increases the secretion of the gastric juice. This produces an excessive appetite, and the individual eats more than the system requires and more than the stomach can digest. This undigested food becomes a foreign body which causes diarrhea and various other stomach and bowel derangements. Parents have not the right to expect that their children will grow up temperate, virtuous and good—to say nothing of their physical health—when they are permitted abuse of this kind of food. Condiments render plain and wholesome food insipid, by destroying the natural acuteness of the taste. Pies, as well as many other articles of food, filled with these

substances, are far inferior to those without them, except it be to those whose tastes are perverted and unnatural.

All alkalies, except such as are naturally contained in food, should be avoided during health, for they impair the power of the stomach to digest the food, by destroying or neutralizing the natural acidity of the gastric juice, without which digestion cannot be performed.

Acids are less objectionable than alkalies, but if used at all, should be used very moderately, except in certain states of the system, as in scurvy, when vegetable acids are very beneficial. Vinegar should be used, if at all, very sparingly.

LIQUIDS.

Water—There is no beverage so wholesome, or to the unperverted taste so agreeable, as pure water, the natural drink of man, which may always be taken in moderation when thirst is present. In some form or other it is essential to life. Water is requisite in many functions of the animal economy; for example, it favors digestion by promoting the solution of our food and acts as a vehicle to convey the more dense and less fluid substances from the stomach to their destination in the body. It gives fluidity to the blood, holding in suspension or solution the red globules, fibrin, albumen and all the various substances which enter the different structures; for the whole body is formed from the blood. Not only the soft parts of the body but even the very materials of the bones have at one time flowed in the current of the blood. Water enters into the composition of the tissues of the body, lubricates those tissues and forms a necessary part of our bodily structure. It equalizes the the temperature of the body by evaporation and regulates the chemical changes resulting from nutrition and decay. It is the vehicle for the removal of effete products from the body; increased water-drinking causes increased flow of urine and thereby facilitates the excretion of solid particles. In this way some of the impurities which cause gout, gravel, etc., may be eliminated. How essential water is for the development and maintenance of the animal body is shown by the fact that a human body, weighing 154 lbs., contains 111 lbs. of water. A man of adult age, average size and ordinary employment, requires from three to four pints of liquid to drink in the twenty-four hours. Such facts suggest the necessity for obtaining pure water, and taking it unpolluted by animal and mineral ingredients. Notwithstanding, where strict chemical purity and an unlimited supply of water cannot both be secured, the latter should be regarded as of the greater importance.

It had been supposed that water should not be taken with meals, lest it should lessen the digestive power of the gastric juice by diluting it. But the later view is that, while as the fluid is

rapidly absorbed, what is taken at the meal may facilitate the secretion of the gastric juice at the time it is required, an excessive quantity must be avoided. But where persons are exposed to great heat and are obliged to work with violent exercise, large quantities may be taken; and then nothing is better than simple water, the purer and softer the better, unless a little oatmeal be added.

Water is the same substance, from whatever source it is derived, whether from seas, lakes or rivers. When allusion is made to differences between waters, it is really to various bodies mingled with the water. Thus a water-analysis really means an analysis of the foreign bodies held in suspension by the water. These foreign matters are exceedingly small in all drinking-waters, but in sea-water there is about one part of solid substance to thirty parts of water. In common waters there are only about 16 to 20 grains in 70,000 grains, or a gallon of water. Common salt is dissolved in three or four times its quantity of water; but carbonate of lime is not dissolved in less than 20,000 times its quantity. Salt occurs more or less in every drinking water, and is undoubtedly wholesome, but inasmuch as sewage is highly charged with salt, any water in which there is an excess is to be regarded with very great suspicion. Many of the worst wells in cities have been resorted to by the public and highly valued on account of their slight flavor of salt; the water was, however, prejudicial to health. Thirty grains of salt to a gallon of water improve it considerably for drinking purposes. The excellences of water are purity, softness, the presence of air and carbonic acid to give freshness, and of salt to make it tasteless, and to prevent its ready contamination by lead.

Water is sometimes soft and sometimes hard, according to the appearance or non-appearance of soap bubbles when washing. Generally speaking, the difference depends upon the carbonate of lime held in solution; until this is exhausted soap-bubbles or lather cannot be produced. There are degrees of hardness; thus a water is said to have six degrees when a gallon consumes as much soap as will combine with six grains of carbonate of lime. Hardness is due to the presence of magnesia as well as lime. Carbonate of lime in small proportion in drinking-water is not injurious to most persons, since it is assimilated and aids in the formation of the phosphate of lime in bones; it is therefore useful for rickety children. Hard waters, however, are not only unpleasant in use and harsh to the skin, but have a tendency to dry up the mucous membranes just as they do the skin; hence they may arrest the digestion and cause gout, stone, gravel and goiter in districts where they are habitually taken. Persons may thus suffer from drinking the waters of a district; and on the other hand, if they have been accustomed to use a water which contains a large proportion of carbonate of lime, they may lose their health by drinking soft water. Attention should therefore be paid to the quality of the water of a district by persons selecting a residence; they may go where the water would be preju-

dicial because it is too hard, or because it is too soft; and they may relieve their ailments simply by removing to a neighborhood where they can drink a different water.

Water now and then contains metals like iron, lead and copper. It ought not to be drunk if there be more than one-tenth of a grain of iron or copper in a gallon of water. A very minute proportion of lead is injurious.

RAIN-WATER is soft, and naturally contains the smallest amount of solid impurity; but unless carefully collected in specially clean vessels in the open country, and then covered, it is likely to become impure. If the atmosphere be impregnated with smoke from crowded dwellings or fumes from chemical and other factories, it cannot be relied on for purity. If, however, it fall through a pure atmosphere it may be contaminated with what has accumulated on housetops and in water-pipes, and if collected from the roofs of houses and stored in underground tanks, is often polluted to a dangerous extent. It is therefore rarely in a fit state for drinking, though it may be very useful for domestic purposes. Its freedom from earthy salts, moreover, renders it liable to contamination from leaden pipes if it should be brought through them. But so beneficial are its effects upon the skin, that an exclusive use of rain-water for washing would greatly modify, if not entirely remove many skin-diseases.

SPRING-WATER is rain-water which has percolated through the earth, and acquired saline elements from the soil through which it has passed. Chalybeate and other mineral waters are thus charged and to such a degree as to render them unsuitable for ordinary drinking or culinary purposes. They should be taken only when prescribed as medical agents.

It is a fallacy to suppose that surface-well water is purer than that obtained from deep wells, because it is more sparkling and often cooler and clearer. The sparkling of these waters is due to the presence of carbonic-acid gas, and that acid is derived from the decomposition of animal and vegetable substances.

WELL-WATER is collected spring-water. If the well be deep, and there is no leakage into it from some higher layer of soil, or from some neighboring decaying animal or vegetable matters, it usually affords a safe and wholesome drink. Some of the purest water is obtained from deep wells. Of the different varieties of drinkable water the best for dietetic purposes are deep spring and well-waters. Superficial well-water, however clear, bright and tasteless, should be regarded with suspicion, for it is frequently saturated with leakage or soakage from privies, drains or cesspools, often covered up and unknown. Water collected from uncultivated land and allowed to subside in reservoirs, or filtered through sand, constitutes good water for domestic purposes; but water collected from the surface or drains of cultivated land is always more or less polluted with organic matter, even after subsidence in lakes or reservoirs and

hence it is not good for drinking purposes, unless it be thoroughly filtered before being used.

RIVER-WATER is partly rain-water and partly spring-water, subject to impurity from the soil and from decaying vegetable and animal matters, and therefore only useful to a limited extent. The flow of the stream and the absorbing influence of vegetation tend to purify the water by oxydation.

DISTILLED WATER is pure, but insipid from its lack of air; its softness makes it easily susceptible to the action of lead; but it is excellent for making tea or other infusions.

Water may be impure from an excess of saline ingredients, from the presence of organic impurities, or from contamination with lead. The chief danger to health is from organic impurity. Cholera and typhoid fever have been traced to drinking impure water. Lead contaminates pure water, but if there be a moderate quantity of earthy salts in the water they form an insoluble incrustation in the pipes, which is protective.

It is most important that the receptacles for water—tanks and cisterns—should be carefully examined and thoroughly cleansed at regular seasons, especially after a time of drought and before the approach of winter. Much mischief is often done and disease induced by allowing cisterns to fill up after they have been dry or the water in them low; the quantity of sediment and filth is frequently very great and if not carefully removed becomes mingled with every fresh influx of water, and thus diphtheria, typhoid fever and other blood diseases may be set up. The deleterious consequences that ensue from neglect of this duty are often alarming, although the source of the evil be unsuspected. Boiling water removes some of the salts from hard water, and destroys the activity of any organic impurities. Filtration, especially through charcoal, also purifies the water by removing organic matters, but it is not to be relied upon. The filter must be frequently cleansed.

Water may be administered to patients at any temperature that may be desired, but if very cold the quantity should be very small, for in some diseases it is undesirable to lower the temperature of the internal organs. If the stomach is in such an irritable state that no liquid can be tolerated, the thirst may be partially allayed by sucking small pieces of ice; but where ice is substituted for water its use must be constant, because ice tends to increase thirst rather than allay it; hence the desire for drink is imperfectly satisfied, so that where water can be borne ice should not be given. Moreover, the reactionary effects of its continued use are not beneficial. When ice cannot be procured, water may be cooled in a porous water-jar.

Ice is a valuable medical agent, and is now extensively used both internally and externally, chiefly to check hemorrhage, to moderate inflammation, and to soothe uneasy sensations in febrile and other disorders. In inflammation of the brain or its membranes, and in the severe headache of the early stages of acute fevers, it is most

useful applied in small pieces enclosed in a bladder or India-rubber bag, in the form of a cap fitted to the head.

To relieve the severe pain and vomiting in cases of ulcer or cancer of the stomach a bag containing small fragments of ice should be laid on the stomach.

In inflammation of the tonsils, the sore throat of scarlatina and other eruptive fevers and in diphtheria, the use of ice relieves pain and arrests inflammation. Ice also modifies the secretions from the throat and so obviates frequent painful efforts to detach the mucus from the crypts and follicles of the tonsils. For these purposes small pieces should be sucked repeatedly.

In hemorrhages, ice is extremely valuable. In bleeding from the mouth, throat or nostrils, ice applied directly to the bleeding vessels or to the surface forms an efficient means of relief. When hemorrhage comes from the stomach or lungs, ice should be repeatedly swallowed in small pieces, for so taken it will help to contract the leaking blood-vessels.

The use of ice internally should be avoided after the fatigue brought on by long-continued or violent exercise; it is then too lowering to the system, and instead of allowing a patient to cool gradually it gives a sudden check to animal heat and to perspiration. Drinking iced water under these conditions is even still more hurtful to the system.

"To allay local inflammation or check hemorrhages from the surface, ice broken into small pieces should be enclosed in a bladder or thin India-rubber bag. When one-third filled, the air should be squeezed out of the bag, which should then be tied at its mouth on an inserted cork, so large and long as to bear the tight pressure of the twine. The bag may then be made into almost any shape, and fitted to the irregularities of the body."— *Ringer*.

Ice is forbidden in conditions such as the following: Old age, especially in feeble patients; apoplexy and insensibility in persons with a feeble pulse; advanced stages of disease; extreme feebleness. In such cases the great sedative powers of ice might overwhelm the patient and stop the action of the enfeebled heart. It is also advisable to avoid too great a shock to the system in any case.

Ice often contains impurities and should never be taken from stagnant pools.

Tea affords no direct nutriment; the sugar and cream or milk usually taken with it yield the nutritious elements, but though yielding no absolute aliment it retards the waste of tissues. When consumed in large quantities tea acts prejudicially on the nervous system; it then promotes nervous agitation, muscular tremors, prostration and palpitation; it may also cause nausea, derangement of the stomach and abdominal pains. Green tea is stronger than black, possesses more active properties and is therefore to be used with more caution. Both kinds, when adulterated, are more or less injurious.

Tea is hurtful: 1, to those of spare habit and the under-fed; 2, to the young who are provided with the full amount of vital activity; 3, to those who perspire too freely; 4, early in the day, for it is then apt to increase tissue-waste; 5, to nervous or hysterical subjects, or those with weak hearts.

On the other hand, it is frequently not injurious: 1, for the over-fed and sedentary, for they require increased vital action; 2, for the old, whose vital activity is deficient; 3, for those who have a non-perspiring skin; 4, during the after part of the day when the system is full of partly digested food, for then the process of digestion requires to be quickened; 5, during excessive heat, in order to relax the skin and relieve internal congestion; 6, for those whose nervous systems are firmly braced up.

As commonly prepared, tea is often the cause of much dyspepsia, particularly when drunk in excessive quantities or too frequently, that is as a rule more than once a day. In some nervous and gastric disorders, tea and other hot beverages are better discontinued, at least for a time. In this way intractable cases have often been cured. Dyspeptics suffering from flatulent indigestion should take tea in very moderate quantities only, as an excess of fluid increases the gaseous distention of the abdomen. Feeble patients often drink tea at every meal and much ill health is the consequence. Tea should not be taken if it cause loss of appetite, palpitation of the heart, mental excitement or sleeplessness. Tea should never be given to children. The common practice of adding a small quantity to milk and water begets a relish for it, leading to its use at an age when the nervous and muscular systems require no such aid. Tea taken with animal food is more liable to produce indigestion than when the meal consists chiefly of bread and butter.

In the preparation of tea three principles are extracted: One aromatic (*oil*); another nitrogenous (*theine*); the other astringent and bitter (*tannin*). The last, the cause of gastric disorder, is only given off after prolonged infusion, whereas the aromatic oil and theine are completely extracted in about two minutes. Hence to make tea, especially for the dyspeptic, it should be made by pouring on the leaves *boiling* water (not water that *has* boiled), and allowing it to stand for two minutes. It may then be poured off into a heated teapot so as to separate it from the leaves. Thus prepared, tea is not so likely to cause flatulence. If the tea be good the infusion will be fragrant, not very deep in color, nor harsh or bitter to the taste. The leaves should not be boiled, or otherwise the peculiar, volatile, aromatic principle is dissipated, nor for the same reason should the infusion stand long; in this case also too much roughness and bitterness are added to the flavor by the extraction of tannin. This tannin, though it makes the tea look strong, is worse than useless, since it renders the food taken with the tea insoluble and indigestible. In an ordinary infusion the first cup of tea is also best, having more of the choice flavor and aroma and less of the as-

tringency and color. River-water makes the best tea; soft water is to be preferred to hard; but soda should not be used, for it only extracts the astringent tannin. The water should only boil once, immediately before using it, and not for hours, as is sometimes the case; the teapot should be quite dry as well as hot when the leaves are put into it, and the infusion, as before stated, not allowed to exceed two minutes. Teapots which retain the heat are better than those that allow it to pass off readily; hence black earthenware teapots should not be used; white glazed earthenware or porcelain, are suitable; but brightly polished silver teapots are the best, for they radiate much less heat than any other material.

The Chinese drink their tea without any admixture; the Russians add lemon-juice; the English, sugar and cream or milk.

THE USE OF SUGAR IN TEA.—Only a small quantity of tea should be used by persons who have a tendency to become corpulent. According to some tastes, the flavor of tea is improved by substituting lemon for cream or milk—pouring out the hot tea over a slice of lemon cut with the rind upon it. Besides being more palatable, the lemon-juice more effectually allays thirst, and is especially valuable at those seasons of the year when fruits and fresh vegetables are not generally to be obtained.

Dr. Chambers says: “The best tea is that which is pleasantest to the taste of the educated customer, and which contains most of the characteristic sedative principles. The sedative principles in the leaf consist of an essential oil, which may be smelt strongest in the finest teas, weakest in the inferior sorts, entirely absent in fictitious teas; and of the alkaloid theine, which may be demonstrated by heating some tea, dry, in a silver pot, when the salt will appear as a white bloom on the metal. If there is any bouquet at all, or any theine at all in the specimen examined it is worth something. The shortest way to test the comparative value of different specimens is to put a teaspoonful of each in one of the little china teapots or cups with covers, here used as ornaments, but originally intended for this very purpose, which has been previously made quite hot; shake the tea about in the hot pot a few seconds and then pour on, quite boiling, a small half-cup of water on each. Cover them up quickly and let them stand by the fire about a minute. Taste them immediately, without milk or sugar, and choose that which has most aroma.”

Coffee contains the same principle as tea and has an analogous influence on the system. It is, however, more heating and stimulating, heavier and more oppressive to the digestive organs and decidedly increases the force and frequency of the pulse. Its effect upon the mental faculties, quickening their energies and causing wakefulness, is not so marked as in the use of tea. It, however, relieves hunger and fatigue. It appears to have a staying power, lessening the amount of waste and thus economizing other food. It is laxative to some and constipating to others, and is serviceable in

warming the body in cold weather; it is also cooling in warm weather by stimulating the action of the skin, though not so much so as tea. It has been found beneficial to those weary from traveling in the heat and suffering from want of food, also in diarrhea from overwork with anxiety. If taken in excess it produces feverishness, palpitation, anxiety, deranged vision, headache, wakefulness and nervous excitement. Taken on an empty stomach it often causes stomach catarrh. It relieves headache, soothes nervous excitability and when given strong counteracts the effect of alcohol and of opium.

For ordinary dietetic purposes it is advantageous to make both an infusion and a decoction. The infusion, made by pouring boiling water on the recently ground coffee, extracts the volatile aromatic principle: the subsequent boiling of what has been infused extracts the remaining ingredients; this decoction free from grounds when poured in a boiling state over the freshly ground coffee, takes up the aroma; a decoction can be made of the grounds from which the aromatic principle has thus been removed. Soft water acts as an extractive better than hard. A most important point in making good coffee is to use a sufficient quantity of the powder. The minimum that should be allowed is $1\frac{1}{4}$ ozs. to a pint of water. The *café noir* of the French contains a larger proportion than this. *Café au lait* consists of a decoction of strong coffee, to which an equal quantity of hot milk is added. It is especially necessary to remember that the full qualities of coffee are not obtained if water is used at a temperature lower than that of the boiling-point. The particles of ground coffee are often found suspended in the liquid and isinglass or white of egg is sometimes used to refine it. Nothing, however, is required beyond pouring a cupful out and returning it to the pot to effect the necessary clearing.

The addition of boiling milk, in the proportion of one-fourth part, adds greatly to the flavor and virtue of the coffee. Lastly, when coffee is taken daily, an enameled saucepan should be used for this purpose exclusively.

In the choice of coffee, the best is from Guatemala (said to be from Mocha), in the form of small, round beans. In the preparation of it, the best plan is to purchase the beans whole, with the aroma still clinging to them, roast them, grind them and add chicory to taste. When made, the coffee should not be kept boiling or the aromatic oil will be lost. After securing a proper quality of coffee-beans, the next very important object is to know that the process of roasting, on which the agreeable flavor of coffee very much depends, has been properly done. If roasted too little, the oil and burnt-smell constituents are not developed, or on the other hand, if done too much, they may be destroyed. Dr. E. Lankester states that coffee-beans, when roasted, may have three degrees of shade—reddish-brown, chestnut-brown and dark-brown, and when a full-flavored coffee is preferred probably the darkest is the best. After roasting,

coffee should not be kept long before it is ground. This is usually done in a coffee-mill; or it is pounded in a mortar. In either case the mill or mortar should be used for no other purpose, as coffee has a marked tendency to absorb other odors and thus to acquire a flavor not its own. When ground it should be used as soon as possible, for in this state it rapidly gives off its volatile oil. The best method for keeping it for a short time is in a clean, accurately stoppered bottle. Lead or tinfoil covering does not so effectually retain the virtues of the ground coffee.

CHICORY yields a drink closely allied in flavor and color to coffee, and is largely used in Europe. In this country it is mixed with coffee for economical reasons. It contains no alkaloid and has no nutritive value.

Cocoa is distinguished from tea and coffee by the large amount of nutriment it contains. It is indeed, a food rather than a refreshing beverage. Of albuminous matters it contains about twenty per cent., and of fatty matters about fifty per cent., before it has been subjected to the process of manufacture. The essential principle also contains much nitrogen. The fat—known as cocoa butter—has this excellence, that it does not become rancid after exposure to air. But the large proportion in which this exists renders cocoa heavy and oppressive to a weak stomach, and thus unsuitable to the dyspeptic or bilious. Its nutritive value strongly recommends it for general use.

DIET FOR ALL DISEASES.

Many patients have lost their lives by the use of improper food, in typhoid fever, dysentery, flux, inflammation of the stomach and bowels, and other diseases, while there are others wherein cures have been prevented or retarded from the same cause. It is therefore deemed important to append an article here giving directions how food should be prepared for all diseases.

DIET FOR BRIGHT'S DISEASE.

The function of the kidneys is to eliminate from the blood products that are useless in the changes and assimilation of food, and materials that have become effete in the disintegration of the tissues, *i. e.*, the waste matters of the body that do not pass through the intestinal canal or the skin. If these were allowed to remain in the blood they would poison it and produce death. When eliminated they constitute urea and pass off in the urine; when retained they cause uremic poisoning. If the kidneys are in an unhealthy condition, as in Bright's Disease, the urea is not eliminated. Now the amount of urinary matter to be thus eliminated

obviously depends very largely on the nature of the food. Fatty, starchy and saccharine matters throw no work upon the kidneys; their products, carbonic acid and water, pass off through the lungs and skin. On the other hand nitrogenous food undergoes such a change in the system as to lead to the production of urea, and thus throws much work upon the kidneys. An animal diet which is the richest in nitrogenous matter yields double the amount of urea voided from a vegetable diet. The inference from this is that when the kidneys are diseased, the less they have to do the better, and consequently the less should be the amount of nitrogenous food. Hence in Bright's disease only very digestible animal food should be taken and that only in small quantities, while vegetable food should preponderate. Now, although there is considerable difficulty in persuading those who are thus suffering to persist in a systematic milk-diet, yet it offers the best chance for arresting the disorder. Schmidt says he has obtained the most brilliant results from an exclusively milk-diet when all other treatment failed. It may be given cold or tepid, and from half a pint to a pint at a time. An adult will sometimes take as much as a gallon in the twenty-four hours. But in addition to a limitation of the nitrogenous supply which will be converted into urea, it is important to facilitate the removal of what exists in the blood as the result of disintegration of tissues. This effete matter fouls the blood. Hence the necessity for a copious use of water and watery drinks, which flow out readily by the kidneys, carrying with them such of the waste as may be soluble in water. This dilution will relieve the kidneys. The drinking of water is also the best means of preventing and relieving the dropsy which usually attends this disease. Alcoholic drinks are decidedly harmful. Alcohol is removed from the system by the kidneys; if then the ordinary means of excretion be ineffective the alcohol remains and produces insensibility, and if it be partially eliminated excessive labor is needlessly and injuriously thrown upon the diseased glands. For Bright's disease, then, the most suitable diet is a preponderance of vegetables, abundance of water, abstinence from alcohol.

DIET FOR BALDNESS.

As the cause of this malady is undoubtedly exhausted nutrition, we must turn our attention to the restoration of the nutritive functions as the first step towards its cure. Abstinence from all stimulants is an important feature in the diet, for it is a fact that reparative power, especially in baldness, is encouraged by total suspension of wine, beer, etc., good wholesome food taking their place. Fat is essential, it being the great nerve restorer, besides supplying the scalp with the lacking material; it may be taken in the form of butter, cream, cheese (if it can be digested), cod-liver oil and milk;

should the latter be found too heavy, it may be taken in the form of *café au lait*. Bacon for breakfast is also useful, its value consisting in the quantity of fat which it contains in a compact form, and when broiled in slices, which secures thorough cooking, it rarely disagrees even with the most delicate stomach. The lean portions are of less value, and when too highly cured, bacon becomes less amenable to the gastric juices.

Stimulation to the scalp is also useful. Local applications of wool-fat, well rubbed in, will be found decidedly beneficial.

When hair begins to grow again after failure, it is soft and downy, like an infant's; it is well, therefore, to strengthen it by shaving; hence Dr. Godfrey's advice, "It is a good plan to mow the cranial lawns once a fortnight until stubble takes the place of down."

DIET FOR CHOLERA.

During Prevalence—Whenever cholera is epidemic it behooves all persons to be very careful of their health, to be scrupulous about sanitary and hygienic matters, and to take only wholesome and suitable food. Every one should abstain from any article of food (whether animal or vegetable) which may have previously disordered his stomach, no matter how nutritious, digestible or safe to others, and avoid all manner of excess in eating and drinking. A light, unstimulating diet should be taken, but food difficult of digestion eschewed—such as pickled salmon, lobsters, raw vegetables, sour and unripe fruits, cucumber, salads, pickles, etc. Wholesome varieties of ripe fruits, whether in their natural or cooked state, and vegetables plainly cooked may be taken in moderation by those with whom they agree. Water for all domestic purposes should be boiled and allowed to cool; drinking-water ought to be filtered as well as boiled, as it is quite possible it may hold in solution the material poison of cholera which would be destroyed by boiling and filtering. Late suppers are unsafe, for if a person is overtaken by the disease in the middle of the night with a full stomach the case is generally a serious one.

During Attack—In every case of cholera complete abstinence from even the very lightest kind of aliment should be inexorably enforced from the moment that the nature of the disease is ascertained till convalescence has become decided; in the observance of this rule consists the very essence of successful treatment. The plan of complete abstinence from food has not invariably been adopted by all ranks of the medical profession, and this may account to some extent for the excessive mortality from cholera during some epidemics. Relapse, with alarming effects, has followed from the administration of a little beef-tea or brandy and water, or milk and water. When favorable reaction has begun, brandy, beef-

tea, arrow-root or other nourishment, instead of stimulating the patient back to health, will only arrest reaction and send him back to death. It is egregious folly to attempt to force the exhausted alimentary organs to perform a physical impossibility, viz., prematurely digest food. None is required and stimulants are worse than useless. Ice may be given freely, to be dissolved in the mouth or swallowed; iced water is also refreshing; enemas of warm milk often repeated are beneficial. When the favorable symptoms are decided, farinaceous preparations may be given, but only in small quantities. In due time broths and soups may follow, but great care must be taken not to arrest recovery by injudicious feeding.

DIET FOR CONSTIPATION.

By constipation is meant the condition due to a collection or impaction of excrement in the rectum—the residuum of the various processes concerned in the nourishment of the body—occasioning irregularity in the evacuations from the bowels, increase in their consistence and often a sense of fullness and tension in the bowels and surrounding parts. It is that which is consequent on the imperfect discharge of intestinal function, which attends derangement of the whole system, and not of the intestinal canal alone.

In very many cases costiveness depends on some faulty habit in the patient the regulation of which will probably suffice to remove the inconvenience. Sedentary habits, drinking too much astringent wine, such as port or Burgundy, or black tea, dissipation, the exclusive use of white bread, taking food too dry and destitute of succulent vegetables, neglect of the calls of nature and the habitual use of aperient medicine, are faults which induce constipation. If these be corrected the disorder will generally disappear. But more precise information may be given with regard to food, for costiveness may to a great extent be treated by judicious dieting of the patient.

All superfluous food that has the property of solidifying the excretions and arresting evacuation must be relinquished. Meals should be taken with regularity three times a day; animal food eaten sparingly; succulent, juicy vegetables and ripe fruits freely. As a rule persons eat too much and too often. If the stomach be overloaded the food will be imperfectly digested; there will consequently be a larger quantity of feces and thus the bowels will be overloaded also. Franklin's rule, "to leave off with an appetite," is a good one. By doing this, in ten minutes the appetite will have departed. Coarse, Scotch oatmeal-porridge, made in the Scotch way, by adding the meal gradually to the water till thick enough, and eaten with molasses, should form part of the breakfast. Brown bread should be preferred to white. It should not be eaten new; it may be taken for a fortnight at a time, and then temporarily changed

for white bread known to be free from alum. If brown bread be not eaten exclusively, a little should be taken with every meal; its effects will thus be more uniformly distributed through the alimentary canal than if only taken occasionally. White bread, when eaten, should be stale; hot rolls, muffins, crumpets, tea-cakes and spongy, buttered toast are not allowable. Bread and potatoes, and indeed all farinaceous food, require to be thoroughly masticated and mixed with saliva, as, correctly speaking, digestion begins in the mouth. Of meats, beef and mutton, chicken and game may be eaten in moderation. Bacon is the most soothing of fats to the digestive canal and may be eaten freely. This, or two teaspoonfuls of salad oil, taken at bed-time will prevent that drying and hardening of the contents of the bowels which causes impaction and consequent inconvenience. Pork and veal are most indigestible meats; also boiled salt meats, wild duck and goose.

Green vegetables, such as spinach, turnips, greens, green artichoke and asparagus, also the heads of cauliflower, may be eaten freely. Lettuce, water-cress and dandelion are also useful, eaten raw. Care must be taken that potatoes are thoroughly boiled and mealy, while new, hard, waxy ones must be avoided altogether. Roast-apples, stewed pippins and stewed prunes are much better than pastry. Rhubarb, and other ripe fruits in season, or preserved, except such as contain small seeds, may be taken freely. Condiments, pickles, melted butter, highly seasoned sauces, woody vegetables, such as celery and cheese, must be avoided by all costive subjects. Curds and whey are perhaps suitable when the gastric juice is deficient, as the previous conversion of milk into curds relieves the stomach of its first digestive process. For tea and coffee, cocoa made from the nibs may be substituted with great advantage. Pure, soft water is a very valuable accessory, both as a drink and for use by enema. A tumbler of water taken while dressing is serviceable, or some may prefer a drink of weak clove-water the first thing in the morning—a tumblerful of water made spicy by pouring boiling water overnight on a few cloves, and letting them stand till morning.

DIET FOR CONSUMPTION.

Adults—For older persons the diet should be digestible, nourishing, varied and sufficiently abundant to meet the requirements of each case. As a general rule it should include animal food as far as can be digested, once or twice a day; oysters and other wholesome kinds of fish, especially those varieties which are richest in phosphorus; good home-made bread, not less than one day old; puddings of arrow-root, rice, sago, tapioca, etc., taken, if preferred, with stewed fruit; various kinds of green vegetables and mealy potatoes, oatmeal and milk; good milk is a priceless article of diet:

raw eggs, swallowed whole or beaten up with a little cold milk, are strongly recommended. Fresh pork, sausages, veal, fish not having scales, pastry, and all articles that give rise to irritability of the stomach, nausea, heartburn, eructations or any other symptoms of indigestion, should be avoided. If the patient be benefited by its use, he may take a moderate allowance of beer or wine. Burgundy, claret or hock, diluted with water, may in some cases be given with good results.

Great discrimination should be observed with regard to stimulants; if they flush the face or accelerate the pulse they should on no account be allowed. Malt liquors are more suitable than strong wine or spirits. Extract of malt affords palatable fat-forming material of an unstimulating nature.

The following dietary is suggested: In the morning take, in case of acidity or other forms of indigestion, two tablespoonfuls of lime-water with milk; or if there be much debility, a dessertspoonful of rum may be substituted for the lime-water; or the lime-water and the rum may be alternated as required.

BREAKFAST. Bread and butter, and a lightly boiled egg; or cold boiled or hot broiled bacon, or broiled fish and a cup of cocoa or black tea.

DINNER. A slice of roast mutton or beef, rich in fat; or a portion of a fowl, or other light meat, with vegetables; and tapioca, rice or other milk-pudding. A glass of malt liquor may be allowed if it do not, as before stated, increase the pulse, flush the face or make the patient feel sleepy and heavy.

EVENING MEAL. At about 6, a cup of good cocoa, with a sandwich or bread and butter. White fish, fowl or other light meat may sometimes be added. Water-cresses, lettuce, etc., may often be allowed with great advantage. Also a small basin of toast and milk, oatmeal-porridge or other easily digestible farinaceous food, may be taken.

Raw beef juice, if suitably administered, is a valuable adjunct to the food of the consumptive. Half the quantity produced, according to the receipt given elsewhere, may be allowed for breakfast instead of the egg or meat in the above dietary; and the other half at dinner, or instead of cocoa at supper, according to the appetite and digestive power of the patient.

Beef-pulp has also been given to consumptive patients with great advantage.

The importance of selecting digestible food is evident from the fact that tubercles do not arise except during a period of imperfect nourishment. By whatever means we can promote nutrition, in the same ratio the advance of consumption is prevented or retarded, an important sign of improvement being an increase in the patient's weight. The system is invulnerable to consumption so long as it is well nourished by a healthy digestive apparatus.

"It is clear, therefore," writes Dr. Chambers, "that it is the

tendency to tubercle, and not the existing tubercle, which we have to fear and to guard against; and that for the successful treatment of consumption we must withdraw our minds from the morbid anatomy of the locality to the fatal propensity of the constitution. I know you are disposed to turn first to the lungs. But if we inquire into the histories of those who have lived long with vomicæ (*abcesses*) or tubercles, they are by no means found to have taken special care of their chests—they have not coddled or lived indoors, in even temperatures, hanging their lives on to their thermometers for fear of coughs; they have gone on with their professions or business or work; they have not ‘laid a knife to their throat,’ but have eaten and drunk like other people and have enjoyed the gratification of their appetites. A patient of mine,” continues the doctor, “over fifty, with copious pyoptysis (spitting of purulent matter), and condensed lungs (of probably a tubercular nature), from his youth, has kept hounds, broken his bones like other Nimrods, contested county elections, sat in Parliament, enjoyed his champagne and other good things, *but never allows any doctoring of his chest.* Leave the respiratory organs alone and direct your thoughts to the organs of nutrition—the stomach and bowels, which will receive with thankfulness and return with interest any care you bestow upon them. It is truly by aid of the digestive viscera alone that consumption can be curable. Medicines addressed to other parts may be indirectly useful sometimes, but they more commonly impede the recovery; whereas aid judiciously given in this quarter is always beneficial, and usually successful. Your aim should be to get the greatest possible amount of albuminous food fully digested and applied to the purpose of the renewal of the body, at the same time that the renewing agencies are brought to their highest state of efficiency. In this way a healthy cell-renewal takes the place of that morbid, imperfect cell-renewal which appears in the shape of tubercular matter.”

Fatty matter, in quantities as large as can be assimilated, has been strongly recommended. The late Sir James Simpson observed the healthy appearance and freedom from scrofula and consumption of the operatives of woolen factories, consequent on the oil which in the course of their daily labor finds access to the skin. It was also seen that the work-people improved in appearance when they engaged in the more oily processes, and often lost flesh and strength after leaving them. So impressed was Dr. Simpson with the value of oil in the prevention of consumption that he laid down rules for its application by inunction. He recommended a bland, inodorous olive oil to be applied warm to the whole cutaneous surface, with a considerable amount of friction, which renders absorption greater.

Cod-liver Oil may be considered as an item of food, and its power in checking emaciation and improving the healthy tone of the muscular structures is now too well known to require commendation. Perhaps some of its usefulness depends on the iodine and

phosphorus contained in the oil, thus forming a natural compound of food and medicine. It may be advantageously given in scrofulous affections and troublesome cough, especially if occurring in a family in which consumption has been fatal.

The best time to administer the oil is with, or directly after, food. If there be any difficulty in retaining the oil, it may be given just as the patient lies down to sleep. Tasty accessories will often disguise the flavor of the oil so as to prevent nausea. But when there exists an insuperable repugnance to the internal use of the oil, injections containing it may be tried; or it may be introduced into the system by inunction, or rubbing it into the skin, or by applying chamois-leather soaked in it to the chest, sides or between the shoulders.

Besides cod-liver oil, there are other animal fats and oils which, if they can be taken and assimilated, are certain to be followed with good results; such as rich milk, cream, butter, home-fed, fat bacon and other substances rich in fatty matter. Suet boiled in milk is one of the best substitutes for the oil and to some persons is not repugnant. Cream is often of great value; to prevent its oppressing the stomach, a teaspoonful of cold, strong, black tea may be mixed with it. Cream is, however, probably inferior to cod-liver oil and has not the same anti-tubercular effect, for the iodine which is present in the former is absent from the latter. These varieties are mentioned so that in the event of a change being desired, one may be substituted for another, as circumstances indicate.

Cod-liver oil is a food rather than a medicine, although the minute amount of iodine and phosphorus it contains may account for some of its curative virtues. It is especially valuable in the various forms of scrofula, and in all diseases which require fatty substances as food and iodine as a remedy.

In the treatment of consumption it stands pre-eminent above other remedies, for when given in suitable cases it checks emaciation and strengthens the muscular structures.

The value of cod-liver oil is often very marked in the sequel of many acute diseases or inflammations occurring in middle-aged and in old persons, in whom the reparative powers are less active than in children; also in the after-effects of acute fevers in children who have suffered, previously to such attacks, from impoverished health. Scrofula, rickets, St. Vitus's dance, etc., are generally much benefited by the administration of cod-liver oil. Chronic rheumatism and gout, chronic bronchitis, chronic skin-diseases, and the degenerative diseases of the aged, are all more or less benefited by cod-liver oil.

Cod-liver oil should, however, not be administered indiscriminately. It is generally inadmissible during the persistence of acute febrile symptoms, congestion, bleeding of the lungs or any active form of disease; digestion being then impaired and the mucous membrane irritable, the oil is only likely to increase the disorder; not till the disease subsides, the pulse falls and the hectic ceases, can it be

of value. The sphere of cod-liver oil is to supply animal heat, to fatten the system and arrest tissue-waste; this is best accomplished when active morbid processes and local irritation have subsided, for then the system is in a condition to appropriate a larger amount of nourishment. Care should be taken to avoid nausea or eructations which generally result from the quantity or quality of the oil. The large quantity of oil taken in some cases occasions disorder of the digestive mucous membrane, or causes it to pass off with the evacuations. The appearance of any oil unchanged in the evacuations is a sign that the quantity given is too large to be digested. It is best given at first in teaspoonful doses twice a day, with or immediately after food; if the stomach be intolerant of it, a teaspoonful, or for young children ten or twelve drops, once a day. If there be still difficulty in retaining the oil, it may be given just as the patient is lying down to sleep. In cases of extreme irritability of the stomach, cod-liver oil may be introduced into the system by inunction or rubbing the skin with the oil.

The disagreeable effects of the oil are often due to the use of inferior and unpalatable kinds. It should be as free from smell, taste and color as possible, thus showing its careful and recent preparation. Freshness is of great importance to its dietetic efficacy. Probably the best method of rendering the oil palatable is to have it made up in bread, as it is then scarcely tasted. The proper proportion is two to four tablespoonfuls of the oil to one pound of dough.

Coffee or milk forms a good vehicle for the oil. Some find the taste removed by eating herring, sardine or anchovy with it. The juice of half an orange may be squeezed into a wineglass, the requisite quantity of oil poured on the top, and the juice of the other half orange carefully squeezed on the top of the oil. Orange and ginger-wine or claret are also vehicles for cod-liver oil. The oil should be poured upon the wine, so that it does not touch the glass, but floats as a large globule; in this way it may be swallowed untasted. A few morsels of agreeable food should then be eaten. Small pieces of ice in each dose render it almost tasteless. Another plan to obviate taste and nausea is to take a pinch of salt immediately before and after the oil. By heating the oil, it is rendered less liable to disagree with the patient. It is also beneficial to omit taking it for a day or two occasionally. The glass should be carefully washed after use, and the oil kept in a cool place. Be careful that none but a pure article is used.

Children—The diet of the children of consumptive parents is of such importance that it should engage attention from the earliest period of life. If the mother be delicate and predisposed to consumption, a wet-nurse of a thoroughly healthy constitution should, if possible, be provided. If a consumptive mother nurse her infant, she is in danger of bringing into activity the tubercular disease in herself; while the child is but imperfectly nourished, and derives, with the supply of milk, an element of danger additional to that

which it inherited from birth. The infant should be restricted to healthy breast-milk until the eye-teeth are cut, after which slight additions of farinaceous or flour-food may be allowed once or twice daily, and the child weaned at about nine months. If a wet-nurse cannot be obtained, the nourishment should bear the closest possible resemblance to the mother's milk, and the best substitute for this is cow's milk modified by the addition of water and sugar-of-milk, for the milk of the cow contains more oil (cream), but less sugar than that of woman. It is prepared for use as follows: Dissolve one ounce of the sugar-of milk in three-quarters of a pint of boiling water; warm to the temperature of breast-milk, when wanted, and mix with an equal quantity of fresh cow's milk, and let the infant be fed with this preparation from the feeding-bottle in the usual way. After feeding, always wash the bottle with a weak solution of soda, and put the teat into cold water, letting it remain there until wanted again.

It is of course necessary to use cow's milk of good quality, always to administer the food freshly mixed, at a uniform temperature, namely, that of breast-milk, and, for the first month not oftener than every two hours and a half during the day and every four hours during the night. On no account should the babe be allowed to sleep with the tube of the bottle in its mouth or to suck as often and as long as it likes. (See also "Diet in Infancy.")

About the eighth or ninth month, when the teeth usually begin to appear, a gradual change of diet is necessary. This should consist chiefly of farinaceous preparations; afterwards sop made with bread which contains no alum, bread-and-milk, light puddings, oat-meal-porridge, and a little mutton-broth, beef-tea or bread soaked in a little gravy as it escapes when cutting up a joint of meat. Feeding with a spoon, by favoring admixture of saliva with the starchy particles, will probably insure a more perfect digestion of food. Till the molar teeth appear, however, all preparations of animal food should be avoided. After weaning, great care should be taken and every kind of food avoided that causes irritation, or diarrhea. Children should be fed regularly, be taught to masticate thoroughly and not allowed to take too active exercise immediately after meals. Even thus early, should there be any symptoms of innutrition, a small dose (ten to fifteen drops) of cod-liver oil may be advantageously given.

HOW TO REDUCE EXCESSIVE CORPULENCE OR FAT.

Some years ago considerable interest was excited by the publication of a method of treatment by which Mr. Banting had succeeded in reducing his cumbersome corpulence to a condition of health, and his weight from 202 lbs. to 156 lbs. There was nothing in this result that might not have been physiologically anticipated

from the dietetic measures he adopted. But he brought into prominence the fact that such measures will prove most effective without medicinal aid. It has been judiciously pointed out by Dr. Pavy, that the reduction in weight is not only due to the changes made in the elementary constituents of the diet taken, but also in its quantity, and that it is unsafe to adopt his scale without discrimination, for it barely comes up to what is regarded as "hospital subsistence diet."

Mr. Banting states that his original dietary table comprised "bread and milk for breakfast, or a pint of tea with plenty of milk, sugar, and buttered toast; meat, beer, much bread and pastry for dinner; the meal of tea similar to that of breakfast; and generally a fruit-tart or bread and milk for supper." The chief feature of this is the exclusion of vegetables and alcoholic drinks. Subsequently he adopted the following scale:

Breakfast at 9 A. M.—five to six ounces of either beef, mutton, kidneys, broiled fish, bacon or cold meat of any kind, except pork or veal, a large cup of tea or coffee (without milk or sugar), a little biscuit, or one ounce of dry toast, making altogether six ounces of solids and nine of liquids.

Dinner at 2 P. M.—five or six ounces of any fish except salmon, herrings or eels, any meat except pork or veal, any vegetable except potato, parsnips, beet, turnip or carrot, one ounce of dry toast, fruit out of a pudding not sweetened, any kind of poultry or game, and two or three glasses of good claret, sherry or Madeira; champagne, port and beer forbidden; making altogether ten to twelve ounces of solids and ten of liquids.

Tea at 6 P. M.—two or three ounces of cooked fruit, a rusk or two and a cup of tea without milk or sugar; making two to four ounces of solids and nine of liquids.

Supper at 9 P. M.—three or four ounces of meat or fish, similar to dinner, with a glass or two of claret or sherry and water; making four ounces of solids and seven of liquids.

Sugar, says Mr. Banting, is the most active of all fat-forming foods, for he has repeatedly observed that five ounces of sugar distributed over seven days (less than an ounce a day) augmented his weight nearly a pound by the end of that time. Other prohibited substances do not produce such obvious results; but he made it a rule to avoid all roots or vegetables grown underground, all fat and all farinaceous matters, eating bread only when it was properly toasted.

For athletic exercises it is often found necessary to reduce the weight and size, and from the regimen adopted in training some hints may be gathered for the guidance of those who are corpulent. For athletes the following dieting has been recommended: Breakfast at 8; the lean of mutton or beef without fat, dry toast, biscuit or oat-cake, a tumbler of claret and water or a large cup of tea without milk or sugar or with a slice of lemon. Luncheon at 1;

bread or biscuit, Dutch cheese, salads, roasted apples, radishes; after eating, a little water, claret and water, or unsweetened lemonade. Dinner at 5 or 6; fresh meat of any kind except pork and veal, and without fat or skin; green vegetables, but no potatoes, pastry or made dishes; a jelly, lemon-ice or roasted apple; claret and water during dinner, one glass of Madeira or sherry after it.

For the reduction of general obesity the preceding dietaries may therefore be thus epitomized.

Admissible—Lean meat, poultry, game, eggs, milk in moderation, green vegetables, turnips, succulent fruit, light wines, dry sherry and bitter ale, all in great moderation; brown bread in moderation, wheaten bread in greater moderation, digestive biscuits, gluten-biscuits.

Prohibited—Fat in every form, butter, cream, sugar and sweets of every kind, pastry and puddings, potatoes, carrots, parsnips, beets, rice, sago and other farinaceous articles, porter, stout, and sweet ales, port and sweet wines.

Exercise and baths are essential adjuncts to dietary treatment in the reduction of corpulence. But the necessity for carefulness in the diet is increased by the fact that a corpulent person cannot usually take exercise sufficient to walk off the diet. If violent exertion be exhausting, digestion is interfered with and at the same time the fat that unavoidably exists in the meat is assimilated, so that the fatty tissue grows, while the muscular and nervous strength is diminished. Many stout persons are already active, and any considerable addition to their activity would add to their discomfort, and possibly prove injurious. Hence the necessity for strict attention to regimen.

DIET FOR DIABETES.

The best treatment of this dire disease is at present open to question, but it is agreed on all hands that it involves very careful attention to diet. For the most remarkable and at the same time the most important pathological character of diabetes is the misappropriation of food required for the nourishment of the body by converting it in a very direct manner into a form of sugar, which is excreted in the urine. It therefore becomes essential to deal both with the diseased condition of the secreting organs, most probably the liver, and with the character of the food from which the sugar is secreted. If the food be such that it cannot be converted into sugar by the diseased glands, organically diseased or functionally disordered, it is obvious that great gain is effected, not only by the suppression of a symptom, but also in the correction of a condition, for the urine being less saccharine, the blood is less saccharine, less impoverished, less unfitted for the purposes of nutrition.

As soon as the actual existence of the disorder is known, an exclusive regimen of skim-milk is prescribed. And it must be exclusive so long as any traces of sugar are found in the urine. All cream must be very carefully removed. Beginning with four to six pints on the first day, the quantity must be increased gradually to from eight to twelve pints daily, according to the age, sex, size and condition of the patient. In no instance should twelve pints be exceeded; and if more than seven or eight be given, the remainder should be taken at separate meals in the form of curd produced by essence of rennet. The skim-milk may be taken cold, or at about 100°, but it must not be boiled. The daily allowance must be divided into regular meals. The curative power of this skim-milk diet is altogether lost if anything be added to it. The abstinence thus imposed is unquestionably very trying to the patient, but it is the condition on which his life is lengthened. Provided there are no complications, great relief, if not a cure, may be expected from this treatment. As a general rule, it will remove the sugar from the urine and completely remove the disease in from twelve days to five or six weeks, if only the hydrocarbons of the food are changed into sugar and in some cases if the albuminates are also thus converted. If this stage is somewhat far advanced and the disease is of long standing and attended with much emaciation, it will be arrested in its course and held in check, though not absolutely cured. It should, however, be remarked, that if, after the expiration of a week there is no reduction of the specific gravity and sugar of the urine, the disease is not amenable to skim-milk or any other kind of treatment. On the other hand, if the symptoms are ameliorated and the patient gains strength, there is much encouragement to proceed and when the treatment has been successful the skim-milk diet should be rigorously continued from a fortnight to six weeks after the disappearance of sugar from the urine, that convalescence may be confirmed.

Great stress must also be laid on the careful selection of ingredients in the transitional diet, to be adopted when the exclusiveness of skim-milk diet may be lessened and some approach to ordinary fare may be permitted. Skim-milk and curds must still be staple articles; but, in addition, one or two moderate meals of lightly cooked, lean chop or steak, or of roast-mutton or beef, with green, non-starchy vegetables, are allowed. The vegetables which Dr. Donkin thinks may be permitted are spinach, lettuce, mustard and cress, the tops of radishes, greens, turnip-greens, French beans and scarlet runners in a very young condition before seed is formed. These are simply not forbidden as highly pernicious; whether it is judicious to take them is another matter. Beef-tea and mutton-broth, from which the fat has been removed after cooling, and without barley or vegetables, except the green leaves of the leek, may also be taken in moderate quantity once daily. Should the progress be favorable and the urine continue to be free from sugar, the fol-

lowing fish may be allowed at the principal meal, which should be early in the day; cod, whiting and haddock. Their livers, however, must be avoided, as also must oysters, salmon, salmon-trout, herrings and other oily fish. In fact, all fatty or oily substances and all vegetable articles of food and drink containing starch and sugar must be avoided with the most scrupulous care, for relapse at this stage will frequently prove serious if not intractable. The chief articles of food prohibited are fat, oils, bacon, pork, butter, cream, milk, cheese and yolk of eggs, white or brown bread, pastry, flour in every form and any quantity, macaroni, vermicelli, rice, sago, tapioca, arrow-root, peas, pea-meal, beans, bean-meal, Indian corn-flour, potatoes, full-grown French beans and scarlet runners, turnips, carrots, parsnips, artichokes, cauliflower, cabbages, asparagus, cucumber, squash and all kinds of fruit in any form, except olives in pickle. All saccharine drinks must also be avoided, including ale, beer, stout, porter, wines; if alcoholic drinks be *necessary*, the diabetic may have the very best pale French brandy, or finest Scotch whisky, or good claret or Carlowitz, but they are generally objectionable. Cocoa free from fat and sugar, tea or coffee without sugar, may be allowed for breakfast. The period during which it will be necessary to adhere to this transitional diet varies very much.

A more permanent dietary is developed out of the transitional by the addition of a much greater variety of animal and vegetable food. But pork, bacon and cheese, bread, pastry, and substances into which flour enters, all starchy products, and sugar in every form must still be most carefully avoided. Indulgence in prohibited articles, at least before a long and indefinable period has elapsed after convalescence, will most certainly be followed by a return of the disease, which then becomes more intractable than on its first invasion.

A few hints may be given in connection with dietetic treatment. Patients should eat slowly and masticate their food thoroughly, and take their meals frequently and moderately, for the digestive organs partake of the general weakness of the system and cannot fulfil their functions so readily as when in health. Their powers should therefore not be taxed by quick and excessive eating.

The body should be kept warm by flannel next the skin; gentle exercise in the open air should be frequently taken in fine weather; the tendency to constipation should be counteracted by the use of suitable medicines.

Dr. Charteris has adduced some evidence to show that dieting is of less importance than the maintenance of the temperature of the lungs by preventing the access of cold external air. The temperature is maintained by wearing a respirator alone during the day and covering respirator and nostrils with a knitted woollen cloth during the night. The following dietary is announced: Breakfast; eggs, fish, one pint of tea, and biscuits. Dinner; steak, cabbage, biscuits. Supper; tea, milk, biscuits. Three pints of

milk during the day are also allowed. The biscuits must contain as little starch as possible in their composition.

DIET FOR DIARRHEA.

In recent cases of diarrhea, food should be given sparingly, consisting of light, non-irritating articles—gruel, rice, baked rice-pudding, arrow-root, arrow-root biscuits, and other farinaceous substances, which should be taken cool. The temperature of food is very important; cold milk and lime-water will often arrest infantile diarrhea when warm milk would be useless. If severe sickness be superadded, all preparations of milk may have to be suspended for a few hours, and whey, veal-broth or water or barley-water substituted. Raw meat or juice sometimes acts favorably in diarrhea of young children.

In chronic diarrhea the diet should be nutritious, but restricted to the most digestible kinds of food; mutton, chicken, pigeon, game and white fish are generally suitable, if not over-cooked. Tender beef is not inadmissible in many cases. Pork, veal and all tough portions of meat should be avoided. Starchy foods, arrow-root, sago, etc., are insufficient for prolonged cases of diarrhea, but are improved by a mixture with good milk. Old rice, well boiled in milk, taken directly it is prepared, forms excellent nourishment. Raw or half-cooked eggs, and good, sound, ripe grapes in moderation, may generally be taken. Mucilaginous drinks—barley-water, gum-water, linseed-tea, etc., are the most suitable. Beer never agrees. Milk and lime-water or scalded milk constitutes the best diet; in feverish conditions it may be iced; soda-water may be occasionally substituted for lime-water. Restricting a patient entirely to this diet is often alone sufficient to cure most cases of diarrhea, not dependent on any organic cause. Even in the latter case much temporary benefit is generally gained. The alkaline milk-diet may be taken in small meals at regular intervals.

As an important accessory to the above the application of a moderately tight fitting flannel bandage around the abdomen is very valuable. Rest in the recumbent posture is especially desirable in acute cases.

DIET FOR DIPHThERIA.

One of the characteristics of this disease is great prostration. To counteract this, the strength of the patient must be well sustained by nourishment from the very commencement. He must therefore be urged to swallow in spite of the pain which this act generally occasions. Use eggs beaten up in milk, beef-tea slightly thickened with rice or pearl-barley, or arrow-root or sago with port

or sherry. A teaspoonful of pure glycerine every three or four hours and as much wine as the patient can take short of intoxication is recommended by some physicians who say it will do much to sustain strength.

If vomiting occur, constantly sucking small pieces of ice tends to allay it. It also affords comfort to the patient by arresting the constant hawking up of mucus, which is usually abundantly secreted. As a diluent, the melted ice promotes the action of the kidneys.

Children will sometimes persistently refuse to swallow because it gives them pain and they cannot understand the necessity for bearing the pain in order to nourish the system. In such cases nutritive injections must be employed. About an ounce of fluid should be given at a time. The injections should be commenced (if necessary) as soon as the true character of the disease is known, and repeated every four hours.

DIET IN DISEASES OF THE LIVER.

As diseases of the liver are very frequently occasioned by errors in diet, careful regimen fills a most important place in the treatment of the functional disorders of that organ. Temporary disturbance and chronic derangement alike call for limitation in the articles of food. The morbid condition which is indicated by jaundice, its yellow discolorations, lassitude and sense of weight and fullness, must be met as much by prohibitions of diet as by prescriptions of medicine. As the two leading causes of diseases of the liver are too abundant, highly seasoned, stimulating diet, and the habitual use of alcoholic drinks, these should be persistently avoided. Excesses at the table, which cause the introduction into the system of a great variety of noxious matters which clog the functional processes and overload the digestive organs, must be supplanted by moderation and abstinence. Heavy meals, sweet and oily articles of diet, and alcoholic stimulants must not be allowed. A minimum quantity of albuminous food should be taken, in order that the quantity of uric acid may be lessened; and a minimum quantity of carbonaceous food, in order that the uric acid may be oxydized as much as possible. Great regularity should be observed in the hours of meals, and only light and nutritious food taken. When acute symptoms are present, chicken-broth, beef-tea, toasted bread scalded with hot water and flavored with a little sugar, roasted apples, and cold water *ad libitum* constitute the most suitable diet. All food, when a more varied regimen is admissible, should be properly cooked, and the quantity taken should be proportioned to the amount of physical work that has to be performed; for one of the most common auxiliaries of liver disorders is deficiency of out-door exercise and the maintenance of sedentary habits.

Those who are subject to diseases of the liver should studiously abstain from malt liquors, port-wine, champagne, and other strong wines and spirits. Entire abstinence will be attended with no serious results; there might be temporary inconvenience due to a craving for what had been habitual, which would be modified by a little coffee or tea and would be speedily overcome, but abstinence at that cost would act beneficially on the functions of the liver.

DIET FOR DROPSY.

In acute dropsy the diet should be similar to that in acute fever; in chronic dropsy the patients require nourishing diet to meet the exhaustion that commonly exists, but on account of that extreme feebleness, easily digestible food only should be taken. To allay the burning thirst often experienced cold water is the best beverage; but any other that the patient desires if not positively injurious may be taken. Water may be said to be a real restorative and may be taken *ad libitum*, for it increases the amount of fluids excreted to an extent greater than its own bulk; it also tends to improve the appetite and strengthen the pulse while it diminishes the dropsical collections. It will thus be seen that the popular notion that drinking water increases dropsy is entirely erroneous.

DIET FOR DYSPEPSIA.

Dyspepsia and indigestion are general terms employed to designate various disordered states of the digestive organs and particularly of the stomach.

Deficient acidity of the gastric juice constitutes one form of indigestion. If the acid be insufficient in quantity, the digestive function is but imperfectly performed, or is arrested entirely.

Excessive acidity is another form. In this condition useless acids have been developed by chemical changes in the food. Hence we have some of the sour eructations which frequently characterize indigestion.

Excessive secretion of mucus also interferes with healthy digestion, for it acts as a ferment and occasions the production of useless acids.

Torpidity of the gastric glands retards the digestive process. In such cases, the irritation of the food and the stimulus of saliva are insufficient to excite the secretive action of the glands; hence the gastric juice is not poured out for action on the food. Persons who suffer from this form of indigestion frequently resort to spiced and seasoned dishes and condiments to stimulate the action of the glands; on the other hand, this very torpidity is induced by the needless use of such gastric stimulants.

These different forms of indigestion occasion imperfect chymification (the transformation of food into chyme), or afford opportunity for fermentation of the food; for when the vital functions are in abeyance, chemical affinities assert their force and produce morbid changes. Hence arise the various symptoms of dyspepsia.

Then duodenal indigestion, due to derangement of the small intestine, occasions imperfect chylification (the transformation of chyme into chyle).

The various unnatural conditions thus included under the common term dyspepsia, or indigestion, obviously require different medicinal and dietetic treatment. This is also manifest from a consideration of the dietetic errors which are generally the proximate causes of indigestion.

Overloading the Stomach—May occur in three ways—by excessive quantity, excessive variety, and different digestibility of food. The quantity may be so large that it may be difficult for the stomach to deal with it; the variety may be so great that what should be digested in the small intestine impedes the action of the gastric juice on that which it is specially designed to solve; and the digestibility of different foods may be such that, after the more digestible food has passed out, some remains in the stomach, an incubus upon its exhausted powers. With reference to these cases it should be remembered that the quantity of gastric juice secreted is limited and only suffices for the digestion of a moderate quantity of food; that different kinds of food—nitrogenous, starchy and oleaginous—require the exercise of different digestive functions; and that different articles also require different periods of time for their digestion, some being liquefied in an hour and a half, others requiring six or more hours before they are fit for assimilation. The capacity of the stomach is not unlimited, either in size or in function; hence it may be easily overloaded and its powers so impeded as to cause indigestion. For as soon as the bulk of a meal is digested, it begins at once to pass out of the stomach into the intestine, the other articles going with it whether digested or not; it is therefore obvious that if two descriptions of food are eaten at one time, a portion of the less digestible will pass along with the other into the small intestines and produce distention, irritation and other inconveniences. Nothing is more common, for instance, than for well-to-do persons to eat a hearty meal of fish, flesh, game and pastry, to finish off with raw salad, dressed with oil and eaten with cheese, to say nothing of dessert consisting of dried fruits, almonds and nuts, washed down with sips of different wines. In such a case easily digested and indigestible articles mingled together, overload the stomach, and half-digested materials pass out with the principal portion of the meal, causing disorders which involve discomfort, if not injury. Indeed, it may be remarked once for all, that though the human stomach is wonderfully accommodating, retribution is sure to come at last, though

perhaps not in the shape of immediate pain or uneasiness in the digestive organs themselves. Many of the complaints incident to persons in comfortable circumstances, though affecting other organs besides the stomach, such as gout, rheumatism, neuralgia, various affections of the skin, etc., can be distinctly traced to imperfect digestion or assimilation of food, though unattended with direct symptoms of dyspepsia.

2. Cooling the Stomach—The natural temperature of the stomach is 98° . The maintenance of this temperature is essential to the discharge of its functions, and to those chemical changes which attend digestion. Whatever lowers it interferes with the secretion of gastric juice, and if the depression amount to 15° or more, completely stops it. If the secretion be thus arrested, it is not resumed until by the exertion of nervous energy (so much waste) the temperature has again risen to 98° ; and it has been found by experiment that after the stomach has been cooled, say 30° , it requires thirty minutes for the recovery of the temperature, after all the water has been absorbed. The mischievous consequence of drinking large quantities of cold water or cold beer during a meal, to say nothing of the fashionable custom of eating ices at the termination of dinner, is that digestion is thereby immediately arrested and the food either remains an inert mass in the stomach, or, in weakly individuals and those suffering from dyspepsia, begins to ferment and disengage acids and gases.

3. Stimulating the Stomach—The use of strong stimulants, especially alcoholic drinks, also arrests the secretion of gastric juice and seems to produce inflammation of the mucous lining of the organ. As a general rule, any quantity of stimulants, whether in the shape of condiments, strong wine or spirits, delays and protracts the process of digestion, instead of assisting it, as is generally supposed. These matters in some cases cause congestion of the glands, which lessens or arrests their secreting power; in other cases they interfere with the solvent chemical action of the gastric juice, if they do not actually decompose it; and if they be taken in any quantity they seem to act as a sort of pickle or preservative to the food and prevent its solution.

4. Eating Too Soon after a Previous Meal—The quantity of gastric juice secreted being only sufficient to digest the first meal, none can be supplied for the second, which also begins to pass out of the stomach undigested and mixed with the first, necessarily occasioning more or less disturbance in the intestinal part of the process. The stomach also, in common with other organs of the body, needs an interval of repose for the recovery of nervous energy. The error of eating too frequently is very common, especially among those who take lunch three or four hours after breakfast and dine again after an equally short interval.

5. Exertion after a Meal—The well known experiment of feeding two dogs and allowing the one to rest while the other

was encouraged to hunt a hare, when it was found at the end of two hours that the first had fully digested its food, while in the other digestion had scarcely begun, is an illustration of the harm of too active exercise immediately after a meal. Even healthy people are apt to disturb their digestion by returning to business or taking exercise shortly after eating; and dyspeptics should rest at least two hours after dinner. Nor is it prudent to exert the brain in any way after eating; for the diversion of nervous energy from the stomach to the brain deprives the former of what it needs at that time, and if the habit be persisted in, is sure to be followed by discomfort and indigestion. Indeed, so important is it that nervous energy should be concentrated on the process of digestion, that it is unwise by reading newspapers and magazines during meals to divert attention from the food and prevent its being thoroughly masticated and insalivated.

6. Eating Late Suppers—Meals should not be taken shortly before retiring to rest. The gastric digestion is almost completely suspended during sleep, and even the intestinal digestion is but imperfectly performed. Hence the food remains in the duodenum and by pressing on the great ascending vein (*vena cava*) is apt to produce nightmare or irregular action of the heart and to disturb the secretion of bile, pancreatic juice, etc. For late diners supper is entirely superfluous; for early diners no substantial meal should be taken within three hours of bedtime.

Dietetic errors such as these evidently demand something besides the administration of medicines; they require reformation of habits. Obviously, the evils attending overloading the stomach are to be corrected by some measure of abstinence from food or from that form of food which more particularly distresses the digestive organs.

The quantity eaten should be always rather under than over what the appetite seems to require, for the appetite is apt to become morbid. Franklin's rule to leave off with an appetite is a good one. By so doing, in ten minutes the appetite will be gone, because the food taken has already begun to be appropriated by the body. The best rule is to carefully observe the sensations after eating a hearty meal; if, within three or four hours there is a feeling of fullness and distention, accompanied with feverishness or irritation, it is clear that too much has been eaten and the quantity should be diminished till it can be comfortably digested. Dyspeptics should also not mix various articles of food at the same meal, but rather vary the diet from day to day. Many substances will be tolerated by the stomach, if eaten alone or with bread only, which would occasion distress and disturbance if mixed with other articles more or less digestible in themselves. Persons with weak digestive powers should be careful not to overload the stomach when traveling or otherwise exerting themselves more than usual. Many railway travelers, stimulated by the attendant nervous excitement, or for

want of occupation, eat a great deal on their journey. It is an error to suppose that the system requires more support when on a journey or a voyage. Food is then really less necessary than when there is active exercise. Hence the extra quantity of food and stimulant taken has the effect of increasing the disturbance and irritation which naturally arise from fatigue and excitement. In fact, the nervous energy is on these occasions diverted from the stomach, rendering the digestion less perfect than usual.

Those who suffer from weak digestion should accustom themselves to drink very little at their meals, especially of any cold fluid. The time to drink is from two to three hours after a meal, when the cold fluid restores the tone of the stomach and assists the digested food in passing out of it to undergo the duodenal digestion. The use of strong stimulants should also be abandoned. For young and healthy persons condiments are unnecessary. Alcoholic stimulants for children, young persons and those in perfect health, are as a rule worse than useless.

Healthy persons as well as dyspeptics should accustom themselves to do without stimulants, excepting in the rare cases when they are thought to be necessary by their medical adviser; and then, like other medicines, they should be the best and purest of their kind. If persons have been long accustomed to alcoholic drinks, the sudden and total discontinuance of their use may in some instances prove prejudicial, but as a rule this is not the case.

The nature of the food for dyspeptics is of less importance than the quantity; still it is by no means unimportant. It should be as simple as possible at each meal, and varied from day to day; and, when variety in the kind of food cannot be secured, variety in the method of cooking and serving it will attain the same object. All articles must be avoided which possess any distinctly unfavorable medicinal properties, or are known to disagree with the individual. It must not be supposed that everything that has disagreed will always disagree and must therefore be utterly and forever excluded from the dietary. Some persons, acting on this erroneous supposition, have reduced their diet to a repulsive monotony and have no relish for their food. Some make the great mistake of excluding solids and take nothing but liquids. Solids are necessary to stimulate the action of the stomach, in which liquid will remain undigested and the organ should be encouraged, by hopeful attempts at variety, to appropriate articles in addition to those which have hitherto been taken. To many persons not a little comfort will be gained by taking animal and vegetable food separately, as in France; *i. e.*, taking meat at one meal, vegetables at another. Vegetables are less likely to cause flatulence if taken alone than if combined with flesh. But whatever the kind, it cannot be too simple nor too plainly dressed.

Of meats, mutton is usually found to be most suitable for those whose digestion is weak, and will often be more easily assimilated

than beef. Roasted meats are better than boiled. Meat should not be over-seasoned, nor baked in a close oven, nor cooked a second time. All fat should be rejected. Boiled chicken, venison, and soft boiled eggs are most digestible. Then come roast fowl, lean turkey, partridge and pheasant, Guinea-fowl, pigeons, followed by lamb, oysters and boiled white fish (except cod). The last may be rendered more digestible and tasty by a few drops of lemon-juice. Rich and oily fishes, and those of firm texture, should not be ventured upon. Of all kinds of fresh meat, that which is broiled is the most wholesome, nutritious and easy of digestion. The lean of a tender round steak, about an inch and a half thick, and broiled over a quick fire from five to ten minutes without being cut or pricked so as to let the gravy out; or a loin-chop, stripped of all skin and fat and broiled over a quick fire from five to eight minutes, will prove a tempting and nourishing morsel. The usual joints of fresh meat, especially the juicy, lean portions, come next in digestibility; if they be taken the dyspeptic has a sufficient range. Greasy meats, such as pork, duck, goose, fatted turkey and salted or preserved meats, are to be avoided. Soups, and other liquid food, are only slowly acted upon by the stomach, and if the diet consist chiefly of them, they seldom fail to produce dyspepsia and should therefore be avoided or thickened with bread, rice or pearl-barley, in order that there may be something solid to stimulate the muscular coat of the stomach.

Vegetables are more slowly digested than animal and farinaceous food, and are therefore more likely to undergo fermentation in feeble stomachs and thus occasion acidity and flatulence. They should therefore be taken with caution and discrimination; still they should not be altogether omitted from the dietary, or disease in some form will ensue. Potatoes should be old and mealy, not young nor waxy; peas and beans must be very young and soft. Spinach can generally be taken; of cauliflower only the head is eatable. Cabbages of all kinds are usually objectionable, especially where there is a tendency to flatulence. Rice and other farinaceous articles, either in the form of porridges or light puddings, are generally found to agree with weak stomachs; but starchy and saccharine matters, in certain debilitated stages of the digestive organs, appear to be transformed into lactic acid and to occasion acid eructations (belchings); oatmeal is in this respect the greatest offender, rice the least. Roasted apples with a little cream and a very little sugar may serve for dessert, but raw fruit should never be eaten at the close of a substantial meal. Between such meals, or as a separate meal, ripe fruits in season, such as oranges, strawberries, raspberries, currants, grapes, peaches, nectarines, apples or other freshly gathered fruit, will be found to agree with most persons, if eaten in moderation and if skins and seeds be studiously rejected; indeed, if taken with a slice of stale bread they will often aid digestion. Plums uncooked should seldom be eaten by persons subject to indigestion, but when cooked the pulp is not objectionable. Dried fruits, whether cooked or uncooked,

may be taken in moderation if skins and seeds be rejected; oily fruits, such as nuts of all kinds and olives, are objectionable.

Bread should be stale or toasted dry. Hot-buttered toast, made spongy and fat, must be rejected; so also must hot rolls, muffins, crumpets, and likewise new or fatty cakes; bread-puddings are safe, when plain and not sweet; water-biscuits are far better than fancy sorts; pastry, puddings and rich cakes are condemned. Cheese should not be taken after dinner.

The most innocent and useful beverage is good, pure, filtered water; the softer the better, if it be pure. The temperature at which it may be drunk should be proportionate to the temperature of the body and its susceptibility to heat and cold. To fermented and alcoholic drinks reference has already been made. Cocoa, made from "nibs," is the best kind of drink for breakfast; one small cup of black tea, infused only two minutes and a half, with a slice of lemon and a little crystallized sugar in it instead of cream or milk, is sufficient in the evening. New milk is not easily digested by some persons; but most people can take it better than skim-milk, whether boiled or unboiled; milk is, however, better not boiled as a rule. Butter is sometimes too rich, but good, fresh farm-butter is not often found to disagree; of all fatty substances it is the most easily assimilated. Very salt butter is often, rancid butter always, objectionable. Fruit, fresh or preserved, jellies or marmalade, often prove a good substitute for butter. Eggs are usually not only wholesome, but easily digested, if they are soft boiled.

In dyspepsia the cooking cannot be too simple. Dishes fried in butter, rich sauces and savory compounds are quite out of place. The appetite should not be thus tempted; the natural flavor of the food so cooked as to make it readily soluble and digestible, and served attractively, should present sufficient temptation. The food should be eaten and the meal nearly completed before the patient drinks. A more objectionable practice than that of drinking with solid food is the too common habit of drinking before the meal. Food should never be taken hot; to scald either tongue or stomach is to injure two useful organs.

The following dietaries are recommended for persons suffering from flatulent dyspepsia:

BREAKFAST—Half a pint of milk, with or without soda-water, one egg lightly boiled, dry, cold toast, bread and butter, with beef-steak or mutton chops.

DINNER—Roast or boiled mutton or beef, better taken warm; roast or boiled fowl or game, without any sauces; any kind of fish except salmon, without sauces; any kind of vegetable except potatoes; a small quantity of stale, brown or white bread; salt to be taken freely, all other condiments to be avoided; fruit stewed with plenty of sugar, if more sugar be added subsequently it does not sweeten the fruit so well; rice-preserves in small quantities; cheese to be avoided.

SUPPER—One small cup of weak, black tea, or of cocoa freed from fat; dry, cold toast, crust of brown bread or oat-cake; a small slice of cold roast or boiled mutton or beef. This dietary is so ample as to include what may be selected from, rather than what may be wisely indulged in. Self-restraint rather than self-indulgence must be the universal rule with dyspeptics who wish to be free from the inconveniences of indigestion.

DIET FOR DYSENTERY.

In dysentery, diarrhea, inflammation of the bowels and typhoid fever, it is essential that scrupulous attention be paid to the diet. By maintaining the recumbent posture and abstinence from all but the simplest food, the bowels are kept at rest and opportunity is afforded for soothing inflammatory symptoms. The food selected should consist only of articles which are known to exert the least stimulant and irritant action on the mucous membrane and muscular fibres. Such are cold water, toast-water, gum-water, barley-water, milk, soda-water and milk, isinglass, rice, arrow-root and cocoa; then come broths, ripe grapes and other liquid forms of food; all to be given cold or cool. When recovery has considerably advanced, stale bread, eggs, white fish (particularly sole and whiting), white-fleshed poultry, fresh game and tender meat may be taken in the order recited. But the return to solid food must be gradual. Acid fruits, succulent vegetables, salted, dried and smoked meats must be avoided; a mealy potato may be allowed with caution. In chronic cases beef-tea and other animal broths may be taken; milk and soda-water, or milk and lime-water should be given according to the requirements of the case. Frequently, too, a change to a dry, mild, equable climate is necessary.

DIET IN ECZEMA AND OTHER SKIN-DISEASES.

Cod-liver oil is a dietetic medicine of great value in eczema, especially in the chronic stage and when attended with emaciation. Children will often take it greedily in its natural state. It may be given with safety to the youngest infant, or it may be given in the form of cod-liver oil chocolate. The daily use of vegetable food is a point that should be rigidly adhered to, especially such as is eaten uncooked—lettuce, celery, water-cresses, etc., for vegetables contain potash-salts which are needed by the blood but are abstracted in the process of boiling. The juice of meat is very valuable; it may be given alone as beef or mutton-tea or mixed with other food. Salted and cured meats are decidedly objectionable, except fat bacon, which is recommended for breakfast. For infants the cod-liver oil is

especially valuable; also good milk in large quantity, chicken-broth, etc. This provision of fresh meat and vegetables, combined with the use of pure, soft water for bathing, will be found very helpful in the relief of all cutaneous disorders.

DIET FOR FEVERS AND INFLAMMATIONS.

There was once an adage in vogue, "Stuff a cold and starve a fever." That was when the feverish nature of a cold was not understood, and when the importance of sustaining the constitution when in a feverish or inflamed state was not recognized. The feeding of fevers is now generally acknowledged to be an important auxiliary in the treatment of them. Indeed, the celebrated Dr Graves said that he desired no higher praise after his death than that he fed fevers. In this, however, there is nothing new, for the value of nutrition for those who were suffering from them was observed in the earliest times. Hippocrates was so decided in his opinion on this subject that in his treatise on the management of acute diseases he lays stress on the administration of wine and barley-gruel, and describes how the latter is to be prepared. The time of dietetic revival is, however, but recent, for until the last generation it was considered necessary to starve out the devouring flame of fever or inflammation by refraining from feeding it, French physicians going to the extreme by depriving invalids of food altogether. The reaction began when Dr. Graves maintained that to feed a fever was essential to its cure. Still it must not be supposed that food is to be indiscriminately or outrageously given. The great art of daily nourishing fever-patients consists in giving a frequent, almost continuous supply of liquid nutriment containing very soluble aliments in a dilute form. Stress must be laid on almost every one of these terms. The supply of food must be frequent, almost continuous; it must be liquid, requiring no effort of mastication, making as little demand as possible on the digestive functions; the aliments it contains must be of a concentrated character, of pure and highly nutritive quality, and yet in a dilute form, in such a condition as to be very soluble by the digestive secretions and easily assimilated by the vessels and glands. Such a supply excludes solid food and large quantities of food at a time.

Preëminent in the treatment of fevers is the free allowance of pure cold water. The patient craves it and he may take it in frequently repeated mouthfuls, as it is nature calling loudly for a simple and cooling fluid. Milk is the most suitable food. It is what has been provided for the weakest organism and contains all that is required for nourishment. It is the sheet-anchor in typhoid fever. If half a quarter of a pint be given every hour, or a quarter of a pint or even more every two hours, a fair amount of nutriment will be imbibed. The administration of milk will, however, require

watching, in case the acidity of the stomach should cause the formation and ejection of cheesy lumps. To avert this result a little lime-water or soda-water may be added to the milk. Whey will be found refreshing and grateful; and sour buttermilk is not to be despised. Beef-juice or jelly, mutton-broth or beef-tea, with as small a quantity of the meat-fibre as possible may take the place of milk in many instances. If these are regularly and freely given the danger of starvation is averted, the emaciation which attends convalescence is lessened and the occurrence of serious secondary disorders is rendered less probable. In all cases it is extremely important that, from the first, small quantities of very nutritious food should be given regularly and persistently.

Barley-water, water slightly sweetened, toast-water, weak lemonade, gruel and extract of meat, are valuable variations of diet. When there is disrelish for food or difficulty of swallowing arising from the arrest of the mucous secretions of the mouth and throat, the parched lips and tongue may be moistened by a little lemon-juice and water, or other agreeable fluid, a few minutes before food is taken. Sometimes the mouth is so foul with slime that great attention is essential to keep it clean, and it may be necessary to wipe it out frequently with a soft rag, moist with a weak solution of permanganate of potash. The cleaner the mouth is kept the better and it should be invariably cleansed before giving food. Sucking and swallowing *small bits of ice* is both grateful and useful. If prostration, feeble and irregular circulation or complications indicate it, wine or brandy must be given, but the quantity of stimulants, and indeed of nourishment, must be regulated by the character of the pulse and the condition of the nervous system. Some allowance of alcohol is indicated when there is great prostration of strength, or trembling of the hands, or quivering of the voice, or low, muttering delirium when the patient is left quiet. It should always be borne in mind that alcoholic drinks are not food, afford no nutrition and cannot take the place of food. They are stimulating auxiliaries, but can never render nourishment unnecessary and should never be administered except with the greatest care and discretion. Roast-apples, grapes, strawberries, oranges, pomegranates, lemons and other ripe pulpy fruit in season may often be given, in the absence of diarrhea, provided all skins and seeds be rejected. They are cooling to the mouth and pleasant to the taste. They are all more wholesome before other food than after. But at a certain stage of typhoid fever, fruits are not admissible in consequence of the danger of extensive ulcerations which are so common in this disease.

Fresh eggs are highly nutritious and if taken raw or beaten up with milk or water are quickly assimilated. They may also be beaten up with a little wine if stimulants are advisable. If, however, the eggs be stale, or if the albumen be hardened by cooking, or if from the state of the stomach the digestion be slow, eggs will

do more harm than good. Generally speaking, they had better be avoided till the gastric functions are restored during convalescence.

As a rule, the temperature of food in sickness should be as nearly as possible that of the natural heat of the body—about 98°. But in cases of fever or diarrhea, or where there is considerable nausea, the cooler it is the better. When there is inflammation of the stomach or bowels or where vomiting is present, the food should invariably be in a liquid form, given quite cold and only a few spoonfuls at a time. A very little pepsin may be helpful in such cases.

When there is considerable prostration, when the patient cannot be raised without danger of fainting, or when he ought not to be moved from the recumbent posture at all, as in typhoid fever or cholera, the liquid food is best given by a china feeding cup and not by a spoon, for taking food by little spoonfuls is often a source of irritation to the sufferer, who prefers being left alone and without food rather than troubled to take it in dribbles. But the same vessel or even another of the same appearance should not be used for both food and medicine.

Sometimes it is necessary to give food otherwise than by the mouth, as at the height or latter end of acute fevers. Injections then become necessary and life may often be sustained for some time by nutritive injections, given by this means. Food must in such cases be blood-warm, diluted and slowly injected as far as possible. If the injection be farinaceous, as barley-water or gruel, the addition of a little diastase (in the shape of malt extract), will to some extent supply the deficiency of saliva. If it consist of broth or beef-tea the addition of a little pepsin will supply the lack of gastric juice. Not more than a quarter of a pint should be given at a time.

Diet for Fever-Patients—Barley-water, water gruel, rice-gruel, toast-water, white-wine whey, rennet-whey, alum-whey, lemonade, linseed-tea, arrow-root, egg-soup, panada, chicken-broth, mutton-broth, beef-tea, malt-tea, tea, biscuit and milk, bread-pudding, rice-pudding, batter-pudding, mashed potato and enema.

DIET FOR GOUT.

Gout seldom attacks persons employed in constant physical labor, or those who live chiefly on vegetable diet. It appears to be probable that gout is occasioned by an accumulation of imperfectly changed nitrogenous matter, due either to an excessive nitrogenous supply, to a defective transforming capacity, to an arrest of transformation by alcoholic drinks, or to an imperfect transformation of some material in the alcoholic drink. For there is found to be an accumulation of oxydizable materials which are not naturally assimilated. Hence they remain in the system in the

form of uric acid which is convertible into urate of soda, the characteristic deposit of gout. At any rate, experience shows that in some subjects the disorder attends a highly nitrogenized diet, sedentary habits, immoral self-indulgence and a free indulgence in the heavier kinds of wine and beer. Even intellectual pursuits, by working the brain without exercise of the limbs, contribute to the development of gout. There is, therefore, perhaps no disease in which properly chosen and well regulated diet and hygiene are of greater importance.

Those, then, who inherit a predisposition to this disorder, who exhibit premonitory symptoms or who have actually suffered from it, should abstain from rich living. The children of gouty parents should be accustomed to eat a large proportion of vegetables, so as to acquire a taste for them and be habituated to the digestion of them. Oatmeal-porridge for breakfast, buttermilk for drink and a very moderate proportion of meat at any time should form their diet while growing. When years of maturity are reached the diet should be simple, that temptation to excess may be avoided, limited in nitrogenous material and consisting largely of vegetables, especially if the habits of life be inactive. Meat should be eaten only once a day; soles, whiting and cod, mutton, tender beef, fowl and game, are suitable. Salmon, veal, pork, cheese, and highly seasoned or made dishes, pastry, greasy or twice-cooked meat, raw vegetables, articles which cause eructation or belching, or other symptoms of dyspepsia, and anything likely to lead the patient to eat more than is strictly moderate, must be avoided. The gouty person should be even more abstemious with regard to drink than to food, altogether avoiding sweet beer, strong and sweet wines. Port is to be particularly eschewed. The lighter wines, such as dry sherry, claret, Burgundy, hock or dry champagne, may be taken by some persons in moderation; but if the gouty predisposition is established even these will bring on a paroxysm. Malt liquors should not be used.

DIET FOR GRAVEL (LITHÆMIA) AND STONE.

Patients having a predisposition to the formation of stone, especially if they have passed gravel with their urine, require medical treatment and careful supervision to correct the tendency to such formations. But in addition to the employment of medicines, attention to diet will be of considerable service. A reference to the varieties of stone, and what produces it, will indicate those ingredients of food that should be avoided.

Uric acid forms the nucleus of most urinary concretions, and many entirely consist of it. The small red cayenne-pepper-grains, (*red gravel*), and the brown lumps of stone are due to the excess of this acid. This excess is closely related to the constitutional dispo-

sition of gout. Indeed, the uric-acid condition often alternates in the same individuals with gout; even in generations this may be observed, gout manifesting itself in one, gravel in the second, and gout again in the third. It is much more frequent in the United States than gout. The great object, then, in treating this disease must be the correction of the constitutional disposition and the prevention of the deposit of uric-acid, where this tendency is known to exist. Where gout is known to exist in a family and gravel is at any time observed in the urine, preventive measures should at once be taken without waiting for the actual presence of those symptoms which only occur at late periods of the disease. All then that has been said in other parts of this work on the dietetic treatment of rheumatism and gout may in all cases be appropriately considered with reference to stone. Indeed the strict observance of precautionary regimen is the more urgent in this case, inasmuch as stone is more painful and dangerous than either gout or rheumatism.

Phosphatic salts exist in the urine when in a healthy condition, but are then held in solution. Should the urine, however, be deprived of its normal acidity by inflammation of the bladder or kidneys, due to an anæmic or broken down state of the constitution, phosphatic gravel may be deposited. It may also form a concretion around some irritating substance in the bladder, as a uric-acid stone. This form occurs chiefly in the aged.

Oxalate of lime, it is always a morbid product. Properly speaking, there is no gravel or sediment; the particles of oxalate float as crystals in the urine, or subside if it be allowed to stand, but not in large quantity. When observed in children this form of gravel occurs in those that have been brought up in the country, but have been underfed, are pale, feeble, and suffer from disturbed sleep, acidity, etc. It seems to be occasioned by their eating too large a quantity of acid fruits and bad vegetables, such as rhubarb sorrel or tomatoes, and drinking hard, unboiled water. It does not appear to be necessary that the food taken should contain oxalic acid, for by fermentation other organic acids taken into the system may be converted into the oxalic. When the oxalate is found in the urine of adults it appears to be consequent on feeble powers of assimilation and exhaustion of the nervous system from over-work, anxiety or excesses; on frequent attacks of gout, or on exposure to damp, cold, want of fresh air, and a low, unvaried diet.

In the treatment of these different forms of the disease it is obvious that first and foremost all avoidable causes must be removed: high living, alcoholic liquors, insufficient exercise on the one hand; over-work, anxiety and excesses of all kinds on the other. Occasional abstinence from animal food for a time is advantageous, except when the oxalic constitutional disposition exists; then it is necessary to allow a generous animal diet of simply dressed and plain, nourishing meat. Restriction must be placed upon: *sugar*,

in whatever form or combination this substance is presented; *fatty matters*—butter, cream and fat meat, whether simply cooked or in the form of pastry; *alcoholic beverages*, especially in the form of sherry, port and the stronger wines, strong beer, champagne, etc. Tea and coffee must also be taken in moderation. Abstinence from these substances is recommended on the ground that the labor of the liver will thus be greatly lightened and correspondingly the vicarious work of the kidneys will be diminished. Succulent vegetables and fruits when cooked should be preferred. Lemon-juice is corrective. But rhubarb, sorrel, apples, pears and other acid raw fruit and vegetables should be avoided. Water-cresses and lettuce are the least objectionable because they correct any scorbutic tendency of the blood and act as sedatives to the urinary organs. Milk-diet and frequent draughts of pure, soft water are also recommended. Filtered rain, or distilled water, rendered alkaline by soda or caustic potash, has a great solvent power and may be taken to the extent of one or two pints daily. Indeed, removal to a locality where pure soft water can be procured is often alone curative.

The value of water-treatment is due to the fact that from drinking but little fluid the urine becomes concentrated and acid and thus irritates the mucous membrane, while more water dilutes the urine. And not only is there a real and substantial benefit through the diminution which the water effects as a diluent in the irritating qualities of the urine, but a still greater benefit is realized in the flushing and cooling of the congested liver. It is quite open to question whether the alkaline waters that are frequently recommended do not confer benefit as diluents rather than as medications. At any rate, the free drinking of pure, soft water is of priceless advantage.

DIET FOR HEART-DISEASE.

A diseased heart is a feeble heart and its impulse is slow; hence the circulation of blood is sluggish and the absorption of liquids through the mucous membranes is retarded. The consequence of this is that liquids are slowly absorbed by the stomach and if any large quantity be taken at once this occasions considerable inconvenience and interferes with the digestion of solid food. The distention of the stomach also interferes with the action of the heart, already too slow and labored.

In heart-disease, then, only a moderate amount of liquid should be taken at once. Dry diet is accompanied by less discomfort. Soup should not be taken at the commencement of dinner; drink taken during the meal should only be sipped and should not be cold. Between meals thirst should be quenched by sips. Dry diet is especially indicated if the sufferer be corpulent, particularly if fat has accumulated about the chest. The diet should be nitrogenous and

nourishing. If dropsy supervene, it will be necessary to aid the functions of the kidneys and skin by imbibing a considerable quantity of water; but as soon as the dropsical tendency is arrested the dry diet should be resumed.

DIET IN HYSTERIA.

In this disorder the diet should be a generous, varied and highly nitrogenous one. Fish or bacon may be taken for breakfast, which will be generally more acceptable and better relished if a cold bath or spinal douche has been taken on rising. For the other meals the diet should be as nutritive as the digestive organs will permit without causing disturbance. But the chief point to be noted here is the disuse of wine, beer and spirits. The daily consumption of alcoholic beverages for the debility from which patients imagine they suffer, should be strenuously opposed, for this, instead of conferring benefit, only tends to confirm the worst symptom of the complaint. There is, further, danger to be apprehended lest the patient should in time learn to enjoy the pleasurable sensations yielded by alcohol so highly that in the end she becomes an inebriate. A feeling of exhaustion or faintness from defective or perverted nervous supplies may indeed be removed by stimulants, but the exhaustion quickly returns, and with it the temptation again to seek relief by the same means. It is most difficult to persuade the patient that the sensations of faintness or exhaustion are really aggravated by stimulants, and that if she will abstain from the delusive draught and adopt rational methods of cure, nerve-power will return and with it appetite and other normal functions.

"The best way of breaking off the habit of yielding to the perverted sensation which so insidiously cries for alcohol," writes Dr. Chambers, "is immediately and altogether to relinquish it. Terrible sometimes is the struggle, yet it is a bracing and ennobling conflict; whereas the long-continued daily annoyance of giving it up little by little is on the whole quite as painful, and is often enfeebling to the mind. Moreover, courage is likelier to give way in a month than in a day."

DIET FOR NERVOUS EXHAUSTION.

There is a large class of people who are ailing and whom neither the vegetarian diet, nor the milk diet, nor the beef diet can benefit. Neither are they made happy by the well man's diet, "good living," "the best of everything." These are the brain-workers, the nervous, the neurasthenics, all, in fact, who are suffering from exhausted nerve. For a number of years past the question has arisen as to what is the best brain and nerve food. The answer

has come at last from England and appears in an article entitled "Food in Neurosal Affections." The substance of it comes to this: Stop eating lean meat and live on fish and bread and butter.

"Experience," the author says, "has taught us the fact, even before physiological chemistry could tell us why, that fat and fish are the foods which are especially indicated. A phosphoric fat has to be supplied to the nervous system."

It is an old fallacy, of course, that the living exclusively on fish is conducive to intellectuality, but although fish-eating cannot make philosophers of fishermen it does not follow that this phosphorescent meat is not useful to recuperate exhausted nerve. The main feature, however, is not the fish but the fat. Lecithin, that conspicuous component of brain and nerve, a substance unknown to the vegetable world, is a fat. Butter, cream and cod-liver oil and milk, fat bacon and the yolk of eggs should constitute the chief factor in the combination diet. Fish furnishes the phosphorus and it also furnishes sufficient nitrogen for support.

"When we consider," says the article, "that the pabulum of the nervous system is a phosphorised fat we can comprehend why the plan of treating cases of cerebral exhaustion by liberal quantities of lean meat has turned out a failure. Albuminoids do not supply the required material for the intended purpose, while in their metabolism they furnish matters which may be called hepatic mal-products or liver stuffs which possess very irritating and toxic properties as regards the brain, consequently a highly nitrogenized dietary is not only without advantages but actually possesses positive drawbacks. The brain is not fed thereby, but in its weak condition is annoyed and vexed by these liver stuffs."

An American patient is cited who lost his bilious headache by striking out of his diet the flesh of all animals except fish. "He lives on a milk and farinaceous dietary with butter plus the fish." It is to be noted that the physicians' main reliance thus far in nearly all cases of weakness from whatever cause has been upon the albumenoids.

DIET FOR RHEUMATISM.

In acute rheumatism the maintenance of a steady, equable temperature is of far greater importance than purity of air or even strict attention to diet. Still nitrogenous, restorative food really retards recovery and if resumed too soon during convalescence will cause relapse. Meat taken in any form, solid or liquid, is converted into lactic acid, the excess of which characterizes rheumatism, and the acidity in the perspiration and urine is markedly increased. The more fleshy and red the meat, the worse for the patient. A non-nitrogenous diet, except in broken-down, debilitated constitutions, or where serious nervous or heart complications exist, has been

found very successful in rheumatic fever. But while this diet diminishes the formation of acid and lessens cardiac power, thus rendering the pulse smaller and softer, this second effect renders extreme caution necessary in its adoption, when either heart or brain is seriously affected.

Dr. Parkes has given biscuits made in the following manner with very good results and with satisfaction to the patients: "Butter was melted in a jug placed in a warm-water bath, and the liquid oil was poured off. Arrow-root cakes were made with a portion of this butter and a little sugar was added. Sweetened arrow-root or other farinaceous jellies are also acceptable.

Farinaceous (flour) food is not so readily and abundantly converted into the offending acid; this, therefore, constitutes the only appropriate diet. During the fever it should be restricted to water, milk and soda-water in equal quantities, barley-water, gruel, arrow-root, rice, corn-flour, panada and other preparations of bread, oat-meal-porridge, mashed potatoes, etc. Even when the pain is gone and all that appears to be requisite is the recovery of flesh and strength, nothing is gained by a too speedy return to ordinary diet; in fact, relapse is rendered probable by its adoption. Mutton-broth, beef-tea and other liquid or semi-liquid preparations, and next light puddings, preparations of bread, white fish and fowl must for a time constitute the transitional diet. Malt liquors in acute rheumatism, sweet wines and much sugar should always be avoided. But alcoholic stimulants may be needed in depression from severe heart implications. Lemon-juice may be taken freely.

In chronic rheumatism the diet should be generous but easy of digestion, as attacks are often occasioned by disorders of the stomach. Beer and strong or sweet wines must be avoided.

A sufferer from chronic rheumatism should wear red flannel next to the skin, or over a cotton garment, the thickness of the flannel being regulated by the weather, and should have plenty of rest and bask in the sun.

DIET FOR RICKETS.

Rickets is essentially a disease of mal-nutrition and is not hereditary as scrofula often is. It is a disease of early childhood, manifesting itself as early as the seventh to the eighteenth month, rarely after the twenty-fourth. Every organ of the body is implicated, although it is most manifest in the bones, which are deficient in lime-elements. They are therefore gelatinous, soft and yielding. This deficiency in the more substantial bony particles is caused by improper diet and is only to be corrected by supplying what is proper. Rickets does not occur in children who are kept too long at the breast, but among those that are weaned too soon. It is not because they are supplied with milk, but because they are fed too

soon on meat and vegetables. It is never so common as in babes that are weaned before the teeth are sufficiently forward and fed on pap, potatoes, bacon and beef. It occurs far too commonly in the great centers of population, where mothers are induced to neglect their children in order to go to work, and especially in large manufacturing towns where they go to mills far too soon after babies are born. For rickety children nothing can take the place of milk—first the mother's milk, if it be good; next comes milk diluted with water, and sweetened with sugar-of-milk; even skim-milk is better than none at all. And the milk may form a large proportion of the diet after the age of infancy is passed. Cod-liver oil, animal broths and fresh meat may then be given. The administration of a moderate quantity of finely scraped raw beef, made into a palatable sandwich, salted and peppered, is much to be recommended. Malt or barley-food is specially suitable for rickety children. It may be prepared in the following manner: Four tablespoonfuls of ground malt should be boiled for ten minutes in a pint of water, the liquid poured off, and a pint of new milk added; the sediment from the husk, if finely ground, need not be removed, as it is very nutritious and rich in bone-forming materials. Cod-liver oil has a specific action in this disease, but should only be given in small doses, ten to twenty drops at first, and the quantity gradually increased to a teaspoonful. During its administration the evacuations should be examined, for the appearance and odor of the oil in them are signs that the quantity should be reduced.

DIET FOR SCROFULA.

The most important predisposing cause of scrofula is undoubtedly hereditary and like most hereditary diseases it is most frequently inherited from the mother. The mother ought not nurse her child if she come of a scrofulous family. If, on the other hand, she be healthy, and the child inherit the scrofulous tendency from the father, she should set herself to provide the most nourishing diet she can from her own breast and as long as possible. Everything which will nourish her, and through her the child, until the molar teeth appear should be perseveringly taken, and everything that will disagree with her, and through her the child, must be studiously avoided.

When the teeth appear and more solid food than milk becomes appropriate, the diet should be of a light and digestible character. A larger proportion of animal food than is usually given to little children should be allowed. Cod-liver oil, as a supplemental article of diet, is an agent possessing such remarkable and well-known properties of arresting general or local emaciation as not to require further recommendation. It may be given in childhood to arrest the development of scrofulous symptoms and throughout future

years either to arrest or to correct them. It may be given in any case in which there is wasting without acute febrile symptoms, in teaspoonful-doses, two or three times a day, commencing even with half a teaspoonful if it be found to disagree or if there be reluctance to take a larger dose. This, or olive-oil, may also be advantageously employed for inunction over the chest, abdomen and back. Beef, mutton, venison and fowls are the best kinds of animal food; to these should be added preparations of eggs and milk, a due quantity of bread, mealy potatoes, rice and other farinaceous ingredients, as more suited to this class of patients than very watery and succulent vegetables. Everything that favors the production of acidity, too much fruit, very salt, sweet, fat or highly seasoned food, should be avoided. No food, not even cod-liver oil, should be so given as to excite disgust. The variety to stimulate the appetite should however be in methods of simple cookery, rather than in the selection of what is tasty but innutritious. Alcohol may be of some service when prescribed as a medicine, but only under the watchful observation of a physician.

DIET FOR SCURVY AND PURPURA.

Scurvy and purpura (though the latter is called *land-scurvy*) are not the same disease, but analogous. Both are characterized by morbid conditions of the blood and capillary vessels which cause effusions of blood of greater or less extent just beneath the skin and in other parts, and are followed by other symptoms. Both are amenable to dietetic treatment in conjunction with suitable medicinal remedies. Scurvy gradually supervenes on the continued use of a dietary deficient in vegetable acids. Its occurrence is greatly aided by general deficiency and limited range of food, exposure to cold and wet, and mental and moral depression. It has been deemed to be inseparable from long voyages, but has been proved to be preventable and curable by means to be found in every inhabited country. It is very prevalent in Iceland, especially on the western coast, where the inhabitants depend chiefly on fishing and where the pastures are limited in extent and inferior in produce.

The corrective is obvious, viz, the supply of those articles of food, *fresh vegetables*, *milk* and good diet generally, which contain ingredients the absence of which has led to the diseased condition. Cabbage is perhaps the most valuable anti-scorbutic we possess. In slight cases of scurvy or purpura, where bleeding from the veins is almost the only symptom, it is very successful both in producing a cure and in preventing other members of the family from suffering from it. The vegetable should be fresh; if it has been kept and then wetted to freshen it up again it is not nearly so efficacious, and if fermentation has taken place it is positively injurious. The

concurrent testimony of many observers shows that the potato is very efficient in *preventing* scurvy; eight to twelve ounces a day are sufficient for this purpose. Oranges, lemons, limes, lettuce, onions, water-cress, mustard and cress, dandelion, grapes, may likewise be used as preventives. Vinegar, good lemon-juice and other vegetable acids are also excellent anti-scorbutics. In severe cases, citrates, tartrates, lactates, and malates of potash should be used as drinks and added to the food. An ample supply of those acids, as well as of preserved vegetables, should be provided for ships which are engaged in war, or have to make prolonged sojourn where fresh vegetables cannot be obtained. The legal supplementary allowance in emigrant vessels is eight ounces of preserved potato, three ounces of other preserved vegetables (carrots, turnips, onions, celery and mint), besides pickles and three ounces of lemon-juice for each person weekly, and this is found to be sufficient to prevent the occurrence of the disease. The commencement of the administration of lemon or lime-juice should not be delayed beyond fourteen days after putting out to sea.

DIET FOR TYPHOID IN CHILDREN AND ADULTS.

Dr. R. W. St. Clair, of Brooklyn, writing in the *Medical Summary*, on this subject says: "There is, perhaps, no disease in which the skill of the physician is shown so much as in typhoid, or where great care and vigilance is more needed, and while it is true that it is a self-limited disease, it is also true that a certain amount of medication is needed. As soon as I am sure that malaria plays no part in the disease, I give turpentine in small doses in nearly every case, particularly where there is tympanites, tenderness of the abdomen, with dry tongue. If there is a falling temperature I give quinine in full doses. If diaphoresis is marked, cold sponging will be grateful to the patient, and tepid sponging if the skin be dry and harsh. This lowers the temperature and seldom if ever prostrates the patient. If chalk mixed with kino does not check any trouble with the bowels, opii. with camphor or tannic acid will (bearing in mind always that opiates should be given with care to children). Supportive treatment is the key note in typhoid complications watched and treated, but the diet needs to be very carefully attended to. When the physician remembers the tender condition of the ulcerated glands of his little patients he will not imperil their lives by giving indigestible food. A single error of diet may prove fatal by bringing on severe diarrhea. "What shall I give the patient to eat?" is a question asked, perhaps, as often as any in the sick room, and it is not always easy to determine what is best in each individual case, and if stated, is quite often forgotten by the nurse.

"The diet should be plain, simple and nourishing. Beef tea, chicken and mutton broth, milk, etc., are the articles generally put down, and what is the result? The little sufferer goes down, weaker day by day, till you fear he will die from starvation, and I am sure they *do*, if fed on extract of beef and beef tea, for I have seen beef tea that a quart would not give a child any more nutriment than water. I have seen the little patient with that starved look till my heart ached, yet what could I do? I tried all the liquid foods with no good results.

"But this has all changed. I now feed my patients, from the first, on Beef Peptonoids. I can truly say I have not seen one patient, where Beef Peptonoids was given from the first, that bore that starved, pinched, once-seen-never-forgotten look. The sordes of the teeth and lips are not so bad, and often none to be seen, showing the condition of the stomach to be better. In health the saliva contains sulpho cyanide of potassium. In typhoid the parotid, submaxillary and sublingual glands secrete very little, the mouth becomes dry, hot, feverish and sordes collect on teeth and lips. Anything that will cause these glands to secrete is grateful to the patient and prevents sordes forming. Beef Peptonoids will do this; so will the mother's milk, and the action of both are very alike.

"Beef Peptonoids is a concentrated food more easily digested than milk, as it will not coagulate, and is highly nutritive. It contains 95 per cent. of flesh forming principles, composed largely of musculine, albumen and caseine. The nitrogenous principles are brought to a partially soluble condition by means of pancreatine. Beef Peptonoids contain very little inert matter, are partially digested, leaving but a small amount of excrementitious substance.

"It is not enough that food is taken into the stomach; it must assimilate. Nature can generally dispose of an excess of nutritive material, but she cannot make up a deficiency. If the food does not assimilate there will be all the symptoms of inanition. The eye will glitter with a feverish light; the pupil, enormously dilated, remains fixed upon you without winking, and with an interrogative astonishment, mingled with fear. The breath is extremely fetid; the tongue thin, pointed, elongated and tremulous, often aphthous.

"As I said before, I have never seen these symptoms when Beef Peptonoids were given from the first, and I *have* seen them disappear soon after the patient was put on this diet."

DIET IN WORM-AFFECTIONS.

It should be distinctly understood that these parasites are not found when the alimentary canal is in a healthy condition; they require thick mucus for their home and nourishment and unless this be secreted they cannot exist. There can be little doubt that

their presence occasions excessive secretion, but there must be a previous secretion in which they are developed. In scrofulous constitutions there is a tendency to this excessive secretion. Food in a partly digested state also favors their development. When worms are known to exist, measures should not only be taken for their expulsion, but also for the correction of that unhealthy condition of the alimentary canal which favors their existence. Injections expel them, but only medicinal and hygienic treatment can be relied on for improving the patient's health and preventing the reappearance of the parasite. Open waters should not be drunk nor used in the preparation of food without being previously boiled or filtered; raw or underdone meat, especially pork, ham, bacon or sausages, should be avoided; fruits and vegetables, such as lettuce, water cress, etc., eaten raw, should be first washed in salt-and-water and then fresh water and examined, for by eating raw, unwashed vegetables the eggs of worms find entrance into the body. Cooks and butchers are more liable to be affected with tapeworm than other persons, and in countries where uncooked flesh, fowl or fish is consumed, intestinal worms abound.

To correct the excessive and morbid intestinal secretion considerable changes of diet are also generally necessary. The food should be taken only at regular hours and selected with special reference to its digestibility. It may include properly cooked animal food—mutton, beef, fowl and white fish. Cakes, pastry, sweetmeats, sweet-made dishes, new, waxy, half-cooked potatoes, butter, veal and pork must be forbidden. Salt as a condiment should be taken freely with the food, but salted meats should be avoided.

The following scale of diet is recommended by Dr. Eastace Smith for a child over two years of age, to be given in four separate meals in the course of the day:

“First meal—Fresh milk diluted with a third part of lime-water. A small slice of toast, or of dry, stale bread.

“Second meal—A small mutton chop, or a slice of roast-beef or mutton, without fat; dry toast or stale bread.

“Third meal—A cup of beef-tea or mutton-broth, free from grease; the yolk of a lightly boiled egg; dry toast.

“Fourth meal (if necessary)—The same as the first.

It is not always easy to persuade children to submit readily to the deprivation of starchy food, for which, and especially for potatoes, there is often in these cases a great craving. So long however as a slimy appearance of the evacuations continues to be observed, the above diet should if possible be adhered to. When potatoes are once allowed, they must be well boiled and should be afterwards carefully mashed with a spoon. *Steaming* is generally the best method of cooking potatoes. Gravy may be poured over them before they are eaten. In cases where the appetite is lost and there is disgust for food children often show an especial reluctance to take meat which it is very difficult to overcome. A small bird, as a

lark or a snipe, will however often tempt them, for their fancy is pleased by the idea of eating a whole bird and this means frequently succeeds when all others fail.

"The above scale of diet need not be literally followed in the case of all children troubled with worms, but may be varied according to circumstances. In general, three meals are better than four; but whichever arrangement is adopted no food should be allowed between the meals."

DIET FOR DIFFERENT STAGES OF LIFE.

Though not properly coming under any heading of "disease," there are stages of life when special rules for the government of the diet may be advantageously observed, and which if followed will result in the most beneficial effects. Such are the natural periods of the feebleness of infancy and of the decay of old age; the transitions from one division of life to another; maternity in womanhood, etc. At each of these periods of life the general health may be greatly conserved, and both the length and enjoyment of life prolonged by judicious application of the dietetic rules given in the following chapters:

Diet in Infancy—Infancy is not naturally a period of sickness; but it is a time in which sickness is often induced by errors in diet. Indeed, there is no more fruitful source of suffering and death at this period than unsuitable or excessive feeding.

Milk is the natural food of infants, and nothing can altogether take its place. If the mother's milk be withheld, unless the milk of another carefully selected mother be substituted, the child will suffer. This alone contains the elements suitable for the growth of the infant, and should be given in such proportions as can be digested, for during the first period of infancy all the digestive functions are not in operation. There are no teeth for the mastication of food, there is no saliva to dissolve it and facilitate its assimilation, while the stomach and intestines are in such a susceptible and delicate state that they are easily deranged, even by the unsuitable food which may be eaten by the mother. There are thus physiological indications that the digestive capacity is limited and that no other food is suitable besides that which the Creator has provided in the mother's milk. When the teeth begin to appear and the maternal milk begins to fail, this may be supplemented by light farinaceous diet.

If the mother's milk fail and a substitute cannot be provided, the milk of the cow should be used, as it approaches most nearly to woman's milk in its constituent elements. It is of course important that the milk should come from a healthy cow or from a dairy where the cows are healthy and well cared for. Where practicable it is desirable that the milk should be always obtained from one particu-

lar cow, but it is essential for the health of the infant that the milk be supplied from cows fed on wholesome food; it is also essential that the cow has not very recently calved. And the fresher the milk the better; for as the mother's milk deteriorates by remaining in the breast after the draught comes on, so the cow's milk is deteriorated by standing. New milk warm from the cow is the best for children at any age.

When given to the child cow's milk should be assimilated as nearly as possible to that of the mother. It should be diluted in the proportion of two-thirds of milk to one-third of soft, pure, tepid water, to each pint of which should have been previously added a drachm of sugar-of-milk (which being extracted from milk is far preferable to cane-sugar), and two grains of finely powdered phosphate of lime. If the milk has been skimmed, a large tablespoonful of cream should be added to each pint of milk; if not skimmed, the addition of two teaspoonfuls will suffice. After a time the proportion of water may be lessened. It is of importance that after the child has been fed the bottle be washed in a weak solution of soda, and that the teat be put in cold water, there to remain till wanted.

Condensed milk is now used to a large extent as a substitute for fresh milk. Its recommendations are that it is cheap and always ready to hand for the preparation of a meal. But it is doubtful whether in such preparations sufficient water is usually added, whether the milk is not too much sweetened and whether infants fed on it do not acquire a plumpness due to the increase of fat rather than of flesh. It is hard to say that it ought not to be used, especially when there is difficulty in obtaining a supply of fresh and pure cow's milk. In using it, it should be remembered that it is to be diluted not merely to the consistence of ordinary cow's milk, but to the substitute for woman's milk.

When dribbling commences and the teeth begin to appear, the infant may be fed on bread-sop, sweetened with sugar of milk, bread-crusts which he can suck and gnaw, plain biscuits, biscuit-powder, parched flour and rusks, or Nestle's farinaceous food; but fancy-biscuits are objectionable. It is not till the glands secrete saliva that the child is able to digest starchy food. Oat-meal boiled in milk and then strained, the resulting liquid being properly diluted, is an excellent food.

And it may be observed that not only is the maternal milk the very best diet that a mother can give to her child, but the best part of it is when "the draught comes in." The reason for this is that it has just been secreted, and is therefore in the most refined and perfect condition. Every minute that it remains in the gland after secretion it deteriorates, for particles are separated which never reunite; and thus the assimilation by the child is less easy.

A little mutton-broth, weak beef-tea or chicken-soup may be occasionally added. But these additions to milk-diet should be only

gradually made towards the approach of weaning. Premature weaning is to be most strongly deprecated; its advantages are superficial, its evils lasting. Too early weaning is a most fruitful cause of rickets. The child may appear to be well, his muscles firm; he may be active and desirous to walk; but the bones have not grown, the limbs yield and become distorted. The bow-legged children so common in manufacturing districts suffer thus in consequence of neglect in infancy.

There are circumstances, however, which justify early weaning. If the mother be a feeble woman, if she be subject to any acute disease or chronic affection, or if she show signs of suffering from continued lactation or nursing—such as headache, dimness of sight, shortness of breath, palpitation or night-sweats—the maternal nursing should be discontinued. And the discontinuance may be desirable at the end of the sixth month, or even of the first or second; for persistence in nursing is then prejudicial to both mother and child.

But the period of weaning should under ordinary circumstances be determined by the growth of the teeth and by the child's age. Milk should be the predominant food till the eye-teeth are cut; it is then not difficult to resume a diet of milk altogether, if in connection with dentition, or teething, there be diarrhea, convulsions or other ailments. From seven to twenty months of age farinaceous matters (flour-foods) may be mixed in gradually increasing quantities with the milk; but they should be well cooked first by being baked and then dissolved by boiling.

Prof. Buckingham is of opinion that a healthy mother should nurse her child until the first sixteen teeth are cut, and that if she cannot nurse it so long it should have no other diet but milk. He states that careful observation has confirmed him in this opinion, for although early deaths may be produced by other causes, the great majority of infants who die fall victims in their second summer when the changes due to teething are going on and their stomachs have been loaded with indigestible food. Up to three years old, the quantity of flours may be increased and given as puddings with a little egg. Bread and butter may also be given, and towards the end of that time a well-boiled, mealy potato with a little red gravy may be given for dinner.

But no child should be allowed to touch animal food of any kind until its eye-teeth and first molars are developed. An English physician has said that the frequent infraction of this rule was worth \$50,000 a year to him; his practice lying chiefly among the children of the wealthier classes. After that age the quantity and quality of meat allowed should be carefully graduated according to the constitution of the child, those of a sanguine temperament requiring less animal and more farinaceous food, while the more robust and less sensitive need more solid nutriment.

One of the greatest mistakes committed in feeding children

consists in giving them too frequent meals, or allowing them to be continually eating, particularly in allowing them sweetmeats and other indigestible articles to be consumed between meals. After two years of age an interval of four hours between meals is rarely more than enough, and to give biscuit, fruit-bread or sweetmeats in the meantime is just subtracting so much from the digestive powers of the stomach which, like every other organ, requires an interval of repose after action.

And here we may add a very strong protest against the practice of giving, even occasionally, alcoholic stimulants to infants and children. The ignorance which prompts some parents to give their children beer, wine and even spirits is marvelous as it is culpable. Such drinks are quite unnecessary, an immediate injury is inflicted on the child, and tastes and habits are formed which will prove baneful in after life. In proof that immediate injury is inflicted, the following fact may be cited: An ingenious surgeon tried the following experiment: he gave to two of his children, for a week alternately, to the one a full glass of sherry and to the other a large orange. The effects that followed were sufficient to prove the injurious tendency of various liquors. In the one the pulse was quickened, the heat increased, the secretions morbidly altered and the flow of bile diminished; while the other had every appearance that indicated high health. The same effects followed when the experiment was reversed, when the orange-girl took wine, and the wine-girl had an orange. The injury cannot be less decided when infants, with their delicate and susceptible organizations, sip beer and wine.

Diet in Old Age—With the decline of life there is a diminution of the activity of the secretions and of the assimilative functions. Disintegrated cell-tissue is but tardily repaired and the muscles become soft, flabby and pale from an insufficient supply of blood; there is therefore a diminution of physical strength. The nervous functions are also only imperfectly performed. Hence it is necessary that there should be some modifications in the diet when a person has passed middle life. Very old people and those who have lost their teeth are in danger of swallowing food before it has been sufficiently broken up and moistened with saliva thus giving rise to indigestion and imperfect assimilation.

Indigestible and innutritious articles of diet should therefore be studiously avoided. The items which were harmless in the vigor of life are now harmful, and must be eschewed. Heavy puddings and pastry overload the stomach. Meat should be tender and nutritious, with the gravy in it; flesh firmer, of tougher fibre and dried pieces should be left to younger consumers. Still there should be in flesh and vegetable sufficient solidity and tenacity to compel mastication and thus promote the secretion of saliva and gastric juice. Soups and broths are nutritious, but they should not con-

tain solid vegetable, which might be swallowed without previous solution by the salivary secretion.

If sleeplessness be troublesome, an egg, a sandwich or a few biscuits, with a little warm wine and water or a glass of bitter ale, the last thing before going to bed, will be found serviceable.

Attention should be paid to the teeth. These little organs of mastication perform a very important part in the preparatory process of digestion. Those that are sound should be preserved; those that are beginning to decay should receive the immediate care of the dentist. Artificial teeth are very valuable substitutes for lost natural teeth, and when a set has been procured they should be examined every few months by the dentist so that they may be fitted to the shrinking gums and their grinding surfaces kept in apposition. The roughness of those surfaces also becomes worn down and consequently the trituration of food is incomplete. Teeth should be obtained not merely to improve personal appearance but also to promote mastication and healthy digestion.

Diet in Maternity—The expectant mother should make few changes in her diet, if it be simple, nutritious and easily digested. It is an error to suppose that she should eat and drink excessively. Quality is to be considered rather than quantity. Rich food does not nourish the infant, and may be productive of serious consequences. Whatever is taken should be thoroughly masticated, and accompanied by a little cold drink, as milk and soda-water. Animal food, plainly cooked, once a day, well boiled vegetables, ripe fruit and farinaceous puddings, will afford sufficient variety and at the same time not disagree with the stomach. Highly seasoned dishes, salted and smoked meat, pastry, rich sauces and much raw fruit are objectionable. Strong tea and coffee and stimulants are usually injurious to mother and child. Everything likely to produce constipation should be avoided, while such food as small quantities of brown bread, biscuits and cooked fruits should be taken to maintain a healthy action of the bowels.

The recently delivered mother should be allowed as much good nutritious food as she can easily digest and assimilate. As soon after delivery as the appetite returns, substantial, nourishing diet may be given. If the appetite be poor (perhaps from exhaustion or want of fresh air, or want of exercise), it may be at once tempted by some simple but palatable food, without waiting for it to become stronger. A mutton-chop or the breast of a chicken, oat-meal-porridge, cold toast buttered, bread and butter, light farinaceous puddings, gruel, cocoa, or black tea, may be given. Many women have suffered from low, inflammatory symptoms and serious womb disorders from a too exclusive use of liquid food, the system being insufficiently strengthened to rally from the physical exhaustion attending parturition, or labor. It should be distinctly understood that wholesome food is the best preventive of inflammation. Too much liquid food is likely to produce flatulence,

distention and constipation, and to retard those physiological changes which take place after parturition.

The nursing mother should abstain from whatever disagrees with herself or may be productive of discomfort to her infant. She should feed well, exercising discrimination in her choice of food, but not over-feed herself. Her meals should be regular, mastication complete, and natural appetite satisfied. If she be a small woman and be habitually a small eater and have small children, she will not require so much as a larger and more robust mother. Highly seasoned or indigestible food, late dinners or heavy suppers, strong wines and spirits should be avoided. It is by no means necessary that a very sparse and limited diet should be adopted, but there should be a judicious abstinence from whatever would disagree with herself or deteriorate her milk. Some self-denial must be practised for the sake of the child; while such kinds of food as goose, duck, salted meats, shell-fish, rich dishes and pastry should not be taken, good meat, fowl, game, farinaceous vegetables and puddings may be eaten. To provide good milk, nothing is better than cocoa, cow's milk or milk and water; to satisfy thirst, barley-water, toast and water or plain water should be taken.

Diet for Travelers—A common error of ordinary travelers is to eat and drink too much. For want of occupation, and under the excitement of traveling, more is eaten than is demanded by a healthy appetite, more than the stomach can properly digest, and more than the system actually needs. In the course of a long journey it is sometimes necessary to time the refreshments by the stopping places at which they can be obtained, but as nearly as possible the ordinary periods for taking meals should be observed. Sandwiches, or some other light repast, will allay the appetite and meet all the requirements of the system in a state of repose and when no physical or mental demands are made upon it. Warm coffee or tea is much to be preferred as a beverage to beer or whisky. The warmth is grateful to the consumer in cold weather and the perspiration induced is cooling in hot weather, care being taken in the latter case not to sit in a draught. The stimulating effect of alcoholic drinks is undesirable for the drinker, while the exhalations therefrom are obnoxious to other travelers.

INVALID TRAVELERS are more in danger of eating too little than too much. They have to guard against the exhaustion of fatigue as well as to maintain the tone of a system already enfeebled, and they are often so injudicious as to tax their powers of endurance to the utmost by attempting too much in the course of a day. In traveling to some distant locality the eager haste to reach the end of the journey often results in needless, injurious fatigue. The day-journeys are often too long, the night-rest is often too short; and if the invalid travels by "easy stages," he is often guilty of the indiscretion of attempting a little sight-seeing, incompatible with the conservation of strength which is really needed. Too much

should not be attempted, and some friend should relieve the invalid of all charge of baggage, tickets, etc., and secure prompt entrance into the waiting-rooms. Arrangements should be made before starting for an ample supply of what may be required by the invalid and in such form and manner that it may be taken when the appetite calls for it. An invalid should not have to wait for what may happen to be the next station, with its hurry and excitement. A basket should be filled with essentials—a chicken, pheasant, ox-tongue, a plain cake, plain biscuits, butter, grapes, and whatever the patient may and can take. Rolls can always be obtained at the hotels. The basket should also be replenished on the way. A little forethought will provide whatever is suitable, tasty, and easily handled in a railway train. The demands of appetite can thus be met when they are most keen, and the invalid is saved from irritation and exhaustion. The modern palace cars afford much assistance in this particular.

TRAVELERS BY SEA should prepare themselves a few days before the voyage for the new conditions to which they will be subjected. Besides taking such medicines as may improve the digestion, over-repletion, irregularity in taking food, rich and indigestible diet and everything likely to disagree should be avoided. During the early part of the voyage, unless the weather be very fine or the traveler be used to the sea, he should remain in his berth in a horizontal posture, and take chiefly liquid food, such as beef-tea, chicken-broth or such light diet. Champagne—iced if possible—is the best beverage if it suits the stomach. Soda-water, with a small quantity of brandy, often suits well. Drinking a tumbler of tepid fresh water facilitates sickness and thus brings prompt relief. When the sickness subsides and the appetite returns, a cup of good coffee without milk or sugar, with a plain biscuit or a small slice of toast, is often grateful.

ARRANGEMENT OF MEALS.

Three times a day is as often as we can safely take food, especially substantial food, like bread, meat, potatoes and the like, and this rule should be followed in health or sickness. The habit of eating often and but little at a time, during sickness, has resulted in the death of many persons. Taking food oftener than three times a day is not allowable with patients, except sometimes in case of slightly nutritious fluids. It is surely unreasonable to suppose that the stomach of a sick man can stand an amount of abuse that would make a well man sick. It takes about three hours for the stomach to dispose of an entire meal and carry it into the upper portion of the intestines, after which an hour or more should elapse before taking the next meal, in order to let the organs of the stomach rest and recuperate. Therefore no two meals should be nearer together than

four hours. Food taken into the stomach before this organ has got rid of the preceding meal must, of course, to a greater or less extent, mix with that already digested and is liable to be hurried along into the intestines undigested, there to ferment and lead to diarrhea, flatulence, colic, etc. Many of these troubles among children, as well as adults, originate from nursing or feeding them every hour or two. Some people breakfast in the morning from eight to nine o'clock, lunch from twelve to one, and dine from four to five in the afternoon, thus bringing their three meals within about eight hours and taking nothing during the remaining fifteen or sixteen hours. In some places in the United States this custom is very common.

Regular Eating—Half of all ordinary diseases would be banished from civilized life if everybody would eat but three times a day at regular times and not an atom between meals, the interval being five hours, four of which are required to digest a full meal and pass it out of the stomach. If a person eat between meals, the process of digestion of the food already in the stomach is arrested until the last which has been eaten is brought into the condition of the former meal; just as if water is boiling and ice is put in, the whole ceases to boil until the ice has been melted and brought to the point, and then the whole boils together. But it is a law of nature that all food begins to decay after exposure to heat and moisture for a certain time. If a meal is eaten, and in two hours another, the whole remains undigested for seven hours, before which time the rotting process commences and the man has his stomach full of carrion—the very idea of which is horribly disgusting. As then all the food in the stomach is in a state of fermentative decay, it becomes unfit for the purposes of nutrition and for making good, pure blood.

The hands and feet must have rest and so with the muscles of the stomach; they can only rest when there is no work for them to do—no food in the stomach to digest. Even at five hours' interval and eating three times a day, they are kept sufficiently at work from breakfast until the last meal is disposed of, usually ten o'clock at night. But multitudes eat heartily within an hour of bedtime; thus, while the other portions of the body are at rest, the stomach is kept laboring until almost daylight and made to begin again at breakfast-time. No wonder it is that the stomach is worn out—has lost its power of action. Many girls become dyspeptic before they are out of their teens in consequence of being about the house and nibbling at everything they lay their eyes on that is good to eat.

ANIMAL FOOD AS A DIET.

It is probable that the time has been, in the far distant past, when man did not use meat. And men exist, who, from their



WHO MAY EAT PORK AND WHO MAY NOT.

Everyone who has regard for, or values health and length of life, should bear in mind the information in regard to pork given on page 357.

FAT PORK IS THE JAPANESE GREAT REMEDY FOR THE CURE OF SCARLET FEVER. They say that no child will die with this disease when the remedy is used as directed on page 710, Vol. I.

childhood, have never used meat, or even butter, and yet their systems are well developed, and they are robust, muscular men.

Some medical writers condemn the use of meat as unnecessary and injurious. But most people of our country have eaten meat, and their parents for many generations before them have done the same, so that their digestive systems are accustomed and accommodated to the use of it, and therefore it is not every one who can leave off eating meat and continue to enjoy good health.

Some physicians claim that they have been compelled to recommend the use of meat to their patients and that its use resulted in a salutary effect. But there is no doubt that many will find themselves better in body and clearer in mind if they will use less meat than they do.

There is hardly a question that the human family would be better off to-day, in the aggregate, had they never used meat at all than they are while using it in that excessive degree which is now common. But, in its use, we would doubtless do better to abstain from eating the flesh of those animals which the Jews were prohibited from eating.

It is stated by Medical Authorities that people who are rugged and healthy and are engaged in outdoor pursuits, and who relish pork, may eat it with impunity. The Hindoos are a healthy people, yet they live to a great extent on rice and are capable of enduring strong, muscular exertions, while the flesh-eating foreigner suffers more or less with diseases of the liver and digestive organs. The native races of Sierra Leone subsist on fruits and boiled rice and are long lived and healthy.

METHODS OF PREPARING FOOD.

The preparation of food by cooking subserves several very important purposes. It removes some things that might prove injurious, destroying any parasitic germs that may exist. It renders food more pleasing to the sight, more fragrant to the smell, more agreeable to the taste and more digestible by the stomach. Flavor is developed and the cohesion of tissues is lessened so that the digestive juices can act more freely upon them. Previous beating and bruising of flesh facilitates the loosening process and makes the meat more tender; hence the custom of beating chops and steaks. Warmth also aids digestion.

Cleanliness is the very first principle of cooking; tact in arranging and setting off the food is no mean accomplishment. In the preparation of food for the sick, greater care, if possible, should be exercised than in similar operations for the healthy. The slightest error in cooking may cause the loss of appetite at the very time when it is most needed. The fastidious taste and weakened stomach

turn in disgust from what may be the most appropriate nourishment, often compelling doctor and nurse to seek some other which may be less suitable and less easily provided. Food prepared without the knowledge of a patient will generally be better relished than if he is first consulted as to what he will have and how it is to be dressed. The cooking should be done at such a distance that no odor from it can come to the sick-room. The room itself is the last place in which food should be prepared if it can be done elsewhere.

Roasting on a spit is by far the best method of preparing food for the table. To retain the nutritive juices, the joint should be placed close to a clear, strong fire for five minutes at first, and then removed to a greater distance until the last five minutes, when it should be brought near the fire again. The albumen and extractive matters are thus hardened into a case, which keeps together the valuable fibrinous particles till they have undergone the desired changes by slow heat, while objectionable oils generated by the charring of the surface are carried off. The dripping is wholesome for the healthy, but (especially if at all burnt) is indigestible if the stomach be at all weak. When the joint is thoroughly roasted the retained gravy will flow out freely at the first incision, and the meat while yet red, will have lost all purple color even to the bone. The time of roasting depends partly on the kind of meat, partly on the size and weight of the joint. Beef, mutton and goose require a quarter of an hour for each pound; veal and pork require an additional five minutes; poultry and game require less than this proportion. Lamb, veal, pork, chicken and the flesh of all young animals is better roasted, because it contains a larger proportion of albumen and gelatine in the tissues, which is partly lost in boiling.

Broiling is roasting applied to small portions of meat. A beefsteak or mutton-chop should be done quickly on a gridiron over a clear, hot fire, free from smoke, so as to retain the juices; it should therefore not be pricked with a fork. Fish is best broiled.

Baking meat at a high temperature is but an imperfect method of roasting—imperfect, because it takes place in an oven, from which there is usually no escape for the volatile fatty acids which are generated. The meat is therefore richer and stronger than when roasted before an open fire and less adapted for weak digestion. If, however, the meat be enclosed in a thick pie-dish, a crust of some sort or a coat of clay (as Gipsies, Indians, etc., cook their joints and fowls), it is delicious. No charring then takes place, but all the fat and gravy which generally ooze out assist in the cooking. The process still goes on after the dish is removed from the oven, if it is kept hot by being enveloped in thick flannel or put in a "Norwegian nest," or "self-acting cooking-apparatus." The "nest" is a box thickly padded inside with felt, so as to retain the heat in the enclosed vessel. It would often be very useful as an appurtenance of the sick-room. Vegetables and fruit should be likewise slowly baked. Eggs should be only sparingly used in baked

dishes, because their albumen becomes more solid and indigestible with prolonged cooking.

Frying is usually objectionable because the fat in which the meat is cooked produces an excess of volatile acids; moreover it is often burnt and thus changed in character and rendered indigestible, causing flatulence and heartburn. If, however, it be skillfully done frying is a wholesome form of cooking food. The skill consists in frying "lightly," quickly and evenly and with constant motion, so that the oil is not allowed to burn. A perfectly clean frying-pan, a clear, smokeless fire, good, pure, clean fat or clarified dripping or a small quantity of oil or genuine fresh butter, are essential. The fat should actually boil, the meat, fish and vegetable be turned about till they are lightly cooked without a scorch, then served hot with all the oil drained away; they are then nice and wholesome for most persons.

Boiling—There is a vast difference between boiling meat which is to be eaten and meat whose juices are to be extracted for soup. In the former case the juices have to be kept in; in the latter drawn out. Slow boiling of a joint makes excellent nourishing soup, but spoils the meat by extracting all the goodness. Quick boiling also spoils the joint by hardening all the fibres. It should be plunged into boiling water and kept at boiling temperature for five or ten minutes; cold water should then be added to reduce it to about 165° (which may be ascertained by putting any thermometer into the water), at which it should be maintained for the whole period of cooking. By the contraction and coagulation of albumen caused by the first plunge, the internal juice is prevented from escaping into the surrounding water, or from being diluted by its entrance through the pores. Mutton and fish are best boiled in hard water, water to which salt has been added or sea-water. The scum which rises on the top of the water while meat is being boiled is always useless and unwholesome and should be removed as completely as possible. Vegetables are best boiled; they should be thoroughly cooked, so as to become soft, then strained in a cullender and served as free from water as possible. Cabbages and carrots can hardly be boiled too long. Soft water is essential for vegetables; steaming them is a form of boiling them in soft water.

Stewing occupies a middle position between roasting and boiling. The meat should be covered with cold water, then heated up and kept simmering, not boiling, till thoroughly done. The nutritive materials are diffused through the solid and liquid, which are then served up together. Hashing is the same process with meat previously cooked. But hashed, or otherwise twice-cooked meat, is very unwholesome.

There is another method of cooking, by which the meat is stewed in its own vapor alone. The meat is placed in a covered jar, the jar is put into water in a saucepan and the water is made to sim-

mer, and when a sufficient time has elapsed the meat is done, quite tender and well adapted to the invalid.

Soups, Broths, Etc.—If it is desirable to extract the nutriment so that it may be given in the form of broth, the meat should be finely chopped or minced, put into cold water, soaked for a short time, then gradually heated to a temperature just below boiling point, at which it should be kept for half an hour or more. But if soup be wanted, the heating should go on to boiling point, and be maintained there, in order that the gelatine may be extracted to solidify the soup. It should be carefully observed that the minced meat be put into cold water for a time, never into boiling water at first. The leanest meat is the best for soup-making; the least particle of fat is out of place in broths or soups, and indeed renders it absolutely unwholesome as well as nauseous. Bones which require long boiling, yield abundant gelatine.

SALTING meat makes it less nutritious, not by the addition of salt, but by the removal of the fluids and salts by the brine. The dried flesh is difficult of solution by the digestive secretions. Soaking in water softens it and removes the salt, but does not restore the nutritive value. The longer the salt remains in the tissues, the harder they become.

DRYING is less prejudicial to the meat; when the process is completed the meat becomes no worse until the decomposition sets in.

SMOKING imparts a flavor to dried meat which many prefer.

MEAT PRESERVED IN TINS is too much cooked to be very digestible. It contains a good measure of nutritive elements and is economical, but is not agreeable to every palate. It is best eaten only warmed up, not cooked again, and served with macaroni and vegetables.

The utensils employed in the preparation of food should be kept scrupulously clean. Cooks do not seem to be aware how often their dishes are unpalatable, and therefore unwholesome, solely from being prepared in a vessel which has a disagreeable flavor remaining in it. Those lined with porcelain should always be used in preference to those of plain iron or tin, which are not so easily cleaned and are therefore likely to affect the flavor of the dishes. Still it must be admitted that they burn more easily, so that without close watching it is very difficult to boil milk in them. Soap is sometimes employed in washing pots instead of soda and it is deemed sufficient to wipe out a saucepan with a dish-cloth when it should be scrubbed out with a hard brush or metal shavings. The grease of the soap and cloth adhere to the metal and its rankness spoils the delicate flavor of something intended to tempt the appetite or satisfy the fastidious digestion of an invalid. Especially is it important that anything with strong and persistent odor, such as onions and other condiments, should be cleansed from vessels, knives, and other utensils before they are used for another purpose. Food is the only thing that should come unexpectedly to the

patient; it is always more enjoyed when it is thought to come from a neighbor or a friend. Great care should be taken that no unpleasant flavor adheres to the food and especially should scorching be avoided; volatile extracts or oils should not be employed for flavoring; the juice of stewed or preserved fruits is far preferable.

In cooking animal food about one-fourth of the weight is usually lost by the process; but the loss varies with the quality of the meat and the process employed. The following estimate of the percentage of loss by cooking has been made :

	BOILING.	BAKING.	ROASTING.
Beef, generally.....	.20	.29	.31
Mutton, generally.....	.20	.31	.35
“ Legs.....	.20	.32	.33
“ Shoulders.....	.24	.32	.34
“ Loins.....	.30	.33	.36
“ Necks.....	.25	.32	.34
Average.....	.23	.31	.34

The loss arises principally from evaporation of water, the escape of fat and nutritive juice and the destructive action of heat. It is least in boiling, greatest in roasting, because in the former process there is no evaporation of water. This suggests that in the baking and roasting endeavor should be made to prevent evaporation. Indeed, the perfection of cooking is to retain as much as possible of the constituent elements of the meat, and this is accomplished in the different methods adopted by subjecting the meat at first to a strong, quick heat, which contracts the fibres, coagulates the albumen at the surface and thus closes up the pores by which the nutritious juices would escape. A lower and less rapidly acting heat will then suffice, for thereafter the cooking goes on through the agency of the natural moisture of the flesh. Converted into vapor by the heat, a kind of steaming takes place, so that whether in the oven, on the spit or in the midst of boiling water, the meat is in reality cooked by its own steam. When properly prepared, instead of being dried up or insipid, the meat will be full of its own juice, which will flow forth as rich gravy at the first cut.

Liebig's Extract of Meat—One small teaspoonful dissolved in a pint of boiling water forms a substitute for beef-tea when there is no time to make the tea or convenience for making it properly. But to it should be added broth in which bones have been boiled or some farinaceous substance, such as arrow root, sago or tapioca, which has been thoroughly boiled. By itself the extract is more stimulating than nourishing and is especially beneficial in cases of muscular exhaustion. It may prove useful in exhausting fevers or debility of the heart. Its stimulating effect is not followed by the reaction which attends alcoholic drinks.

A teaspoonful of Liebig's extract in a pint of barley-water with a pinch of salt and flavoring, is very nourishing. A teacupful

of milk in addition will make it more so. And a greater improvement is made when for the milk are substituted the whites of two eggs beaten up with two tablespoonfuls of milk and stirred in when the barley is sufficiently cool to be eaten.

Beef-tea—1. Half a pound (or a pound, according to the strength required) of rump-steak should be cut up into small pieces and put into a covered enameled saucepan with one pint of cold water. Let this stand in a cool place for several hours and let it then simmer gently for two hours. Skim well and serve. If grease be specially repugnant, the last traces may be removed by lightly skimming the surface with pieces of white blotting-paper. If there is time it is better to let the beef-tea get quite cold and then remove the cake of fat.

2. The same proportions of beef and water placed in an earthen vessel, lightly covered and allowed to stand in a saucepanful of hot water near the fire for several hours is a plan much commended.

3. Heat the meat and water gradually to the boiling-point, and then strain immediately.

4. In order to make beef-tea or any extract of meat quickly, economically and of a certain required strength, some physicians recommend the use of a receiver having an air-tight screw-cover, with safety-valve and a boiler. A small quantity of the beverage may be prepared as follows: One pound of beef, divested of fat, bone and gristle and cut into very small pieces should be put into the receiver, adding eight ounces of water, the cover screwed tightly on, and the receiver placed in the boiler, which has been filled with water. It should boil for three hours, when the receiver should be removed and when sufficiently cool, the cover unscrewed. After squeezing the meat, now a tasteless mass, thirteen ounces of beef-tea, without any loss of aroma and three times stronger than that prepared in the ordinary way, will be obtained. As experiments prove that one pound of beef will yield five ounces of meat-juice, the extract can be more or less concentrated by regulating the proportion of water. The preparation can be made in one-third of the time if salt be added to the water in the boiler. The extract of course becomes gelatinous and consolidates on cooling, when bones or the sinewy parts of meat are used; but gelatine, contrary to the popularly received opinion, is comparatively unimportant in nutrition.

5. Shred a pound of beef (with sausage-machine if possible); place it in a jar and add a saltspoonful of salt; place the jar in a saucepan so large that it may be covered with the lid. Mix exactly equal quantities of boiling and cold water, and of this put half a pint into the jar which contains the meat and enough in the saucepan around the jar to reach as high as the water inside the jar. Cover the saucepan with the lid and place it on the hearth or where the heat of the water will be maintained, but not on the fire or stove

where it will be increased. Stir the meat every ten minutes or quarter of an hour, and in three-quarters of an hour to an hour (if the meat has been minced in the machine) or longer, according to the fineness of the shredding, the first process of extraction will be completed; the jar should be taken out, the juice strained off through a hair-sieve or muslin and set aside. The albumen which coagulates at 135° , is thus secured. The meat left in the sieve should now be put into the saucepan with a quart of boiling water, covered and slowly simmered for three hours; then boiled up and strained at once. The liquor strained off should be boiled down to half a pint and when cooled down mixed with the other half-pint set aside. The result is a pint of strong beef-tea, with all the soluble portion of the meat and the albumen uncoagulated, ready for use. The fat may be removed while warm by white blotting-paper or when cold in the solid cake. The beef-tea should be warmed up by placing what is required in a cup and setting the cup in a basin of boiling water; but water should not be mixed with it (except to dilute it) nor should it be put on the fire to boil. Flavoring may be added to taste. Coloring may be given by putting a thin slice of brown toast or a small piece of burnt onion in the saucepan when the meat is set on to boil.

The meat used in any preparation for invalids should be as fresh as possible and should be divested beforehand of all fat or gristle. If this precaution be neglected, a greasy taste is given to beef-tea which cannot afterwards be completely removed. In re-warming beef-tea which has been left to cool, care must be taken to warm the tea up to the point at which it is to be served and no higher; this is best done, not by putting it on the fire, but in a covered vessel placed in hot water. When once allowed to get cold it never regains the agreeable flavor it possessed when fresh.

Rice (whole or ground), pearl-barley, vermicelli, sago or tapioca may often be advantageously added to thicken beef-tea.

Beef-Juice—1. Take a pound of rump-steak or leg of beef, cut up into pieces the size of dice; put it into a pint of cold water, into which previously mix twenty drops of hydrochloric acid and half a teaspoonful of salt. Cover up and let it stand in a cool place for two hours. Strain off the liquor (pressing the meat) and gently simmer for ten minutes. A tablespoonful will give more nourishment to a patient than a cupful of ordinary beef tea. In extreme cases it might be given without being cooked. Beef-juice combined with albumen (white of egg) yields much sustenance in typhoid fever.

2. Shred the beef and put it into a jar (no water); tie up close and put the jar into a saucepan of water, and let it simmer. Give the invalid one or two spoonfuls at a time; keep the jar in hot water. Make fresh when all goodness is extracted.

Beef-Essence—This is prepared as follows: A pound of lean beef, free from skin, bone and fat, should be cut up into small

squares, put into a large earthen jar with cover, the edges cemented with flour-paste or the cover tied down tight with several thicknesses of paper; tied up tightly in a cloth; put into a saucepan so that the top of the jar is not reached by the water, and boiled from one to two hours; the liquid essence should be poured off from the coagulated muscle, let stand till cold and the fat skimmed off. This contains a large quantity of nutriment, is generally pleasant to the palate, and is particularly valuable in extreme exhaustion. A few teaspoonfuls may be given every one, two or four hours.

Beef-Pulp—Instead of raw, minced beef, often recommended, scraped beef is far more easily digested, as it is free from sinews and it is more palatable. It may be prepared as follows: Take a piece of steak cut like a little block, scrape the surface with a silver spoon until all the pulp is extracted, then cut a slice off the steak and scrape the newly cut surface again. One or two tablespoonfuls of the pulp may be given at a time to an adult. A dessertspoonful may be given for one meal to children, mixed with red-currant jelly, or spread as a sandwich between bread. In the latter case it requires a sprinkling of salt and some pepper. Pulp thus prepared has been taken with great benefit in dyspepsia, chronic diarrhea and weakness following a long illness. It has also been given to consumptive patients with great advantage.

Mutton-Broth—1. This may be made in a similar manner to beef-tea, either plain or thickened. For this purpose, the best part of the sheep is the scrag-end of the neck, free from skin and fat, bruised and cut into small pieces.

2. Mutton-broth may be made either plain or thickened, according to the taste of the patient. Bermuda arrow-root is an agreeable ingredient for thickening. Take half a pound of the scrag-end of neck of mutton; strip off all fat and skin; bruise thoroughly the meat and bone together with a chopper; then place the meat in a hollow dish with just enough cold water (from a vessel previously containing a pint) to moisten the solid matter; add a teaspoonful of salt; cover over with a flat-dish and set aside for three-quarters of an hour; then remove the liquor and meat into a stewpan and add the remainder of the water; place the stewpan close to the fire until the contents just simmer, when begin to skim by passing three sheets of clean white paper over the surface. Maintain the simmering heat for an hour and a half and strain through a hair sieve.

Veal-Broth—Veal-broth is barely palatable, without the addition of a few vegetables. Take twelve ounces of good knuckle of veal, quite fresh; strip off all skin and fat; bruise the meat and bone together with the chopper; place in a hollow dish and add a teaspoonful of salt and just water enough to moisten the meat (from a vessel previously containing a quart); cover over and set aside for twenty minutes; then add the remainder of the water (from the vessel just mentioned); put the whole into a stewpan close to the

fire; watch until it simmers and skim as directed for mutton-broth. Maintain the liquor at just simmering heat for an hour and a half, skimming cautiously; then pour off, strain through a hair-sieve and prepare the vegetables. (If no vegetables are to be used, cut up two very thin, crisp slices of dry toast into small pieces; put them into a large breakfast-cup or small broth-basin, fill up with the hot liquor, add ten drops of lemon-juice and serve).

Calf's Foot Broth—Put a thoroughly cleaned calf's foot with a little lemon peel in three pints of water; simmer for three hours; then boil down to a pint and strain. Remove the fat when cold. For use, melt half a pint of the broth; add an egg well beaten up with a little white powdered sugar, not more than half an ounce of butter and a little grated nutmeg; stir these in the broth till it thickens, and serve at once. It should not boil.

Chicken-broth—Chicken-broth may be either served plain or thickened. If plain, it will always require a few slips of thin, crisp, dry toast to render it palatable, for otherwise it is exceedingly insipid. Take a full-grown young chicken, picked or skinned, and dressed; cut in halves and to one half add half a pint of water; place in a hollow dish or basin; cover over and set aside for twenty minutes; then add a teaspoonful of salt and a pint more water; place the whole in a clean saucepan near the fire; watch till it simmers and immediately begin to skim as directed for mutton-broth. Maintain at a simmering heat for an hour and a half, skimming continually; pour off and strain through a hair-sieve.

Veal-Soup—A knuckle of veal, two cow-heels, a glass of sherry, two quarts of water and twelve pepper-grains. Stew in a covered earthen jar for six hours. Do not open it till cold, then skim off the fat and strain. Serve very hot.

Gravy-Soup—Take a little carrot, turnip, onion and celery, with a clove and pepper; boil the whole gently, and strain and for each half-pint of liquor add a tablespoonful of extract of meat with a little salt.

Barley-Soup—One pound of shin of beef, four ounces of pearl-barley, one potato, salt and pepper to taste, one quart and a half of water. Put all the ingredients into a pan and simmer gently for four hours. Strain, return the barley and heat up as much as required. A small onion may be added if not objected to.

Sardinian Soup—Take two eggs, beat them up and put in a stewpan, add a quarter of a pint of cream, one ounce of fresh butter, salt and pepper to taste and as much flour as will bring it to the consistency of dough. Make the mixture into balls the size and shape of a nut, fry in butter and put them into any sort of broth or soup, to which they make a very nice addition.

Baked Soup—Cut a pound of lean beef into slices, add one ounce of rice, pepper and salt to taste, place in a jar with a pint and a half of water, cover closely and bake for four hours. If preferred pearl-barley may be substituted for rice.

Egg-Soup—Over a slow fire beat up the yolks of two eggs, a piece of butter as large as a big walnut and sugar to taste, with one pint of water, the water being gradually added as the ingredients become intimately mixed. As soon as the preparation begins to boil, pour it backwards and forwards to and from the saucepan and jug till it is quite smooth and frothy.

Lentil-Soup—Mix a tablespoonful of lentil flour and a teaspoonful of corn-flour with a little milk, till as thick as cream. Boil three-quarters of a pint of milk sweetened and flavored to taste; pour this slowly on the flour and milk, stirring meanwhile. Boil altogether for ten minutes, still stirring. A whipped egg afterwards added will improve the soup. Salt may be substituted for sugar. This is a most nourishing albuminous food, and a good substitute for beef-tea.

Eggs, Cream and Extract of Beef—Wash two ounces of the best pearl-sago until the water poured from it is clear; then stew the sago in half a pint of water until it is quite tender and very thick; mix with it half a pint of good boiling cream and the yolks of four fresh eggs and mingle the whole carefully with one quart of good beef-tea which should be boiling. This broth is very useful in cases of lingering convalescence after acute disease.

Egg and Wine—1. Beat an egg with a fork till it froths, add a lump of sugar and two tablespoonfuls of water; mix well, pour in a wineglassful of sherry and serve before it gets flat. Half the quantity of brandy or whisky may be used instead of sherry.

2. Beat one egg to a froth with a tablespoonful of cold water; take a glass and a half of water and a glass of sherry, hot but not boiling; pour this on the egg, stirring all the time; add sufficient sugar to sweeten. Put all into a lined saucepan, set it on a gentle fire and stir it one way until it thickens, but do not let it boil. Serve in a glass with crisp biscuits or "fingers" of toast.

Egg-Pudding—Beat up one egg with a teaspoonful of flour and sufficient milk to fill a basin rather larger than a teacup; tie the basin and contents in a cloth and boil for twenty minutes. Milk, sugar or red gravy may be added when served.

Minced Fowl and Egg—Remove all skin and bone from a cold roast-fowl, mince the flesh; put bones, skin and trimmings into a stewpan, with one small onion if agreeable to the patient, and half a pint of water; let this stew for an hour, then strain the liquor. Chop a hard boiled egg small and mix with the mince; salt and pepper to taste; three tablespoonfuls of new milk or cream, half an ounce of butter, one tablespoonful of flour and a teaspoonful of lemon-juice; to this add the gravy, let the whole just boil and serve with toasted bread.

Panada—Take the crumbs of a stale French roll, soak it in milk for half an hour, then squeeze the milk from it; have ready an equal quantity of cold cooked chicken or lean sirloin of beef or loin of mutton scraped very fine with a knife; pound the bread crumbs

and meat together in a mortar; season to taste; cook either with veal or chicken-broth, in a tin put in a warm oven or poach like an egg. Serve on mashed potato.

Potato-Surprise—Scoop out the inside of a sound potato, leaving the skin attached to one side of the hole, as a lid. Mince up fine the lean of a juicy mutton-chop, with a little salt and pepper, put it in the potato, pin down the lid, and bake or roast. Before serving (in the skin) add a little hot gravy if the mince seems too dry.

Stewed Eels—Wash and skin an eel, cut it in pieces two inches long, pepper and salt them and lay in a stewpan; pour on them half a pint of strong stock and half a glass of port wine; stew gently for half an hour; lift the pieces carefully into a very hot dish and place by the fire; strain the gravy and have ready two tablespoonfuls of cream mixed with sufficient flour to thicken it; stir this into the gravy, boil for two minutes and then add a little Cayenne. Pour over the eels and serve. The addition of a little lemon-juice is gratifying to some palates.

Fried Flounders—Skin them, wash and wipe them dry, dip them in beaten egg, then strew over with bread crumbs. Have ready a pan of fine olive oil and be sure it boils before you put in the flounders; fry a light brown and then turn over once; lay them on napkins for the oil to drain off; serve with plain, melted butter.

Broiled Flounders—Skin them, wash and wipe dry; broil on a gridiron over a clear fire; a very little butter may be smeared over the surface to prevent it catching too quickly; serve with melted butter.

Stewed Oysters—Half a pint of oysters, half an ounce of butter, flour, one-third of a pint of cream and salt to taste. Scald the oysters in their own liquor, take them out and strain the liquor. Put the butter into a stewpan, dredge in sufficient flour to dry it up, add the oyster liquor and stir it with a wooden spoon over a sharp fire. When it boils, add the cream, oysters and seasoning and simmer for one or two minutes, but not longer, or the oysters will harden. Serve on a hot dish, with toasted bread. A quarter of a pint of oysters, the other ingredients being in proportion, make a dish large enough for one person.

Suet and Milk—1. Put a tablespoonful of shredded beef-suet into half a pint of fresh milk; warm it sufficiently to completely melt the suet, skim it, then pour it into a warm glass or cup and drink before it cools. This recipe will be found valuable in cases where fat is essential, for weakly children, neuralgic patients, and also in falling off of the hair.

2. Chop an ounce of suet very fine, tie it loosely in a muslin bag and boil it slowly in a quart of new milk; sweeten with white sugar.

Suet and Barley-water—Chop an ounce of suet very fine, tie it loosely in a muslin bag; place this in a pint of thin

barley-water, with a quarter of an ounce of isinglass or gelatine and a little sugar, and boil all together for an hour, adding warm water occasionally as it boils away; pour the barley-water on a dozen sweet almonds pounded fine, and mix well; then strain.

Lime-water and Milk—Lime-water, two teaspoonfuls to half a tumblerful of milk; add a little sugar to taste. This compound will often be retained when the stomach rejects all other kinds of food. The same may be said of milk and soda-water in equal proportions.

Artificial Ass's and Goat's Milk—Take half an ounce of gelatine, and dissolve it in half a pint of hot barley-water; then add an ounce of refined sugar and pour into the mixture a pint of good, new, cow's milk.

Milk, Rum, and Gelatine—Dissolve in a little hot water over the fire a pinch of the best gelatine; let it cool; mix with it in a tumbler a dessertspoonful of rum and fill up the glass with warm new milk.

BREAD AND ITS COMPOSITIONS.

Value of Unbolted Flour—By our system of grinding, bolting and separating wheat our fine flour contains but a little over half the quantity which has been provided for the wants of our systems in this important grain. The almost universal use of fine flour, instead of unbolted flour, is doubtless a fruitful cause of not only disease, but imperfect development of the system and its organs; in fact it is quite certain that here is to be found one of the most fruitful causes of consumption. And it would be far better if physicians would feed their patients with unbolted flour and thereby supply the phosphorus that is found in this kind of flour, than to give them the various phosphates directly from the mineral kingdom for preventing and curing consumption.

In the process of bolting flour, the dark portion is separated almost entirely, and yet this is the nutritious portion of the grain and that which in a great measure nourishes the muscles and gives strength to the system; whereas the white or starch-portion of the grain is of but little use except as a heat-producing agent; and in this respect it is far inferior to fat or oil, and most of the oil in wheat is contained in the dark or external portion of the kernel.

Dr. Bennett says: "Now, if there is a well established fact emanating from experimental analysis, it is this: that superfine or very finely bolted wheat-flour will not alone sustain animal life. This fact has been repeatedly demonstrated by Magendi, the greatest physiologist who ever lived. Having ascertained that the muscular and nervous tissues, including the whole brain or cerebral mass, was composed of nitrogenous matter, he readily concluded that starch or the fecula of wheat would not alone sustain

animal life, for the reason that it contains not a particle of nitrogenous matter. Consequently, he found by experiment that animals fed exclusively on very finely dressed flour died in a few weeks; whereas those fed on the unbolted thrived.

"Then again by the repeated analyses of both American and European chemists it is abundantly demonstrated that the portion immediately beneath the external covering contains a very large per cent. of nitrogenous matter, which should be mixed with the internal, or non-nitrogenous, in order that the muscular and nervous systems be properly nourished. Add to this well known fact that the inhabitants of Scotland, Germany, Russia, as well as families and individuals in all parts of the world, who use almost exclusively unbolted flour, are seldom troubled with dyspepsia or indigestion, enjoy better health generally and are possessed of much greater powers of endurance, and we have an array of facts, which, if universally heeded, would consign the use of superfine flour, unmixed with this most nutritious or nitrogenous part, to oblivion. The worst cases of scurvy sometimes occur in persons who live almost principally on toast and bread made of superfine flour. In fact, we feed to our domestic animals the most nutritious and important part of the grain and retain for our own use an inferior, heat-producing material, with a less amount of nutritious matter than was intended for our benefit. We also lose the sweetest portion of the grain, and all of this is sacrificed to simple fineness and whiteness, notwithstanding our teeth are perishing for want of use. Many of the most important aliments of our blood, brain and bone are found in the greatest abundance in the colored, outward part of the wheat, which we deem fittest for pigs; so we fatten them and suffer ourselves.

Raising Dough—Different methods are employed for this purpose and some very objectionable ones. Dough is rendered spongy and light by the formation of gas through the mass, distending it and forming small cells. In the process of raising bread by the aid of yeast-leaven, salt or milk-risings, carbonic-acid gas is generated by the commencement of fermentation, which process is checked by baking. The use of leaven, or a portion of sour dough kept from a former baking, almost always gives a sour taste to the bread, caused by the presence of what is known as lactic acid; its use is therefore objectionable. The employment of chemical substances is likewise objectionable and they should never be used for raising bread or biscuit. Bicarbonate of potash or saleratus and sour milk should not be employed, as it is difficult to get the exact quantity necessary to neutralize the acidity of the milk; and if enough is used to prevent a sour taste, an excess is very sure to remain in the biscuit, often sufficient to change the color and affect the taste. Yeast and salt or milk-risings are far preferable to either of the above. The mineral substances used for raising bread, such as bicarbonate of soda, that is, the baking-powder, cream of

tartar, etc., are more or less impure, being adulterated with sulphurous acid, lime, alum, chalk, bisulphate of potash and various other preparations. These poisons have no business in the kitchen, and should be speedily banished.

Toast is rarely made well. Bread burnt on both surfaces, with the inside spongy, is unwholesome food. It should be of moderate thickness, slowly and thoroughly baked through, nicely browned on the outside—in short, not toasted too fast. Such toast is wholesome to eat or to soak in water.

Bread-crumb Pudding—Put a thin slice of bread into a cool oven and when perfectly dry roll it till it becomes a fine dust. Beat up one new-laid egg with a dessertspoonful of powdered loaf-sugar; add three tablespoonfuls of new milk, put in the crumbs and beat the mixture up well for ten minutes. Put the pudding in a basin previously rubbed with butter; now tie a cloth tightly over, place it in boiling water, and boil for thirty minutes.

Bread-Pudding—1. Part of a stale loaf of bread, boiled and served with butter and salt, or with preserves, affords a change of wholesome food. Bread-puddings made with eggs and milk, either boiled or baked, may be made according to the receipt used at Westminster Hospital: Bread, $\frac{1}{4}$ lb.; milk, $\frac{1}{4}$ pint; sugar, $\frac{1}{4}$ oz.; flour, $\frac{1}{4}$ oz.; 1 egg for every 2 lbs. Puddings made in the same way of stale sponge-cakes or rusks, diversify the diet.

2. Pour half a pint of boiling milk on a French roll; cover close and let it stand till it has soaked up all the milk; tie up lightly in a cloth and boil for a quarter of an hour; turn it out on a plate and sprinkle a little sugar-candy over it. The addition of burnt sugar or tincture of saffron will give it the orthodox yellow color.

Macaroni—Wash two ounces of macaroni, boil it in a quarter of a pint of milk and the same quantity of good beef gravy till quite tender; drain, and put the macaroni on a very hot dish and place by the fire; have ready the yolk of an egg beaten with two tablespoonfuls of cream and two tablespoonfuls of the liquor the macaroni was boiled in; add half an ounce of butter; make this sufficiently hot to thicken, but do not allow it to boil; pour it over the macaroni, and strew over the whole a little finely grated cheese. The macaroni may be served as an accompaniment to minced beef, without the cheese, or it may be taken alone with some good gravy.

Macaroni-Pudding—Three ounces of macaroni should be soaked for forty minutes in cold water, well mashed, then added to a pint of boiling milk. This should be stirred occasionally, while it simmers for half an hour; then two eggs added, beaten up with a dessertspoonful of sugar; also, if desired, a flavoring of lemon. This may then be baked in a pie dish for twenty minutes. Vermicelli may be used instead of macaroni, but requires only twenty minutes soaking.

Boiled Rice—Put one teacupful of rice into a sauce-pan

with one-fourth of a cupful of water, cover, and place it over a good fire; after an hour the water will be evaporated, and the rice cooked tender but dry, and with the grains distinct, not in a paste. Sufficient salt should be added in the first place and care should be taken not to disturb the rice when cooking. By adding a little butter and allowing the rice to dry a little more, a more delicate dish is prepared.

Ground-rice Pudding—Boil half a pint of new milk with two ounces of loaf sugar; moisten two tablespoonfuls of ground rice with three of cold milk. When this is well mixed, then stir the boiling milk into it; put into a clean saucepan and stir over the fire for twelve minutes, and then let it get cold. Beat three new-laid eggs, yolks and whites separately; stir the yolks with the rice, and if allowed by the medical man, two teaspoonfuls of cream. Beat the whites to a stiff froth, add them and beat the mixture for five minutes. Rub a pie dish with butter, pour in the mixture and bake in a quick oven for some eighteen minutes; then serve at once.

Rice-Cream—To a pint of new milk add a quarter of a pound of ground rice, a lump of butter the size of a walnut, a little lemon-peel, and a tablespoonful of powdered sugar; boil them together for five minutes, then add half an ounce of isinglass which has been dissolved, and let the mixture cool; when cool add half a pint of good cream, whisked to a froth; mix all together, and set it for a time in a very cool place or on ice; when used, turn it out of the basin into a dish, and pour fruit-juice round it, or some stewed apple or pear may be served with it.

Pearl-Barley—1. It should be boiled for four hours, so tied in a cloth that room is left for the grain to swell. Only so much water should be added from time to time as to feed the barley and supply the waste of evaporation, lest the goodness of the barley should be boiled out. It may be served with milk, or (if the patient can digest them) with preserves or butter.

2. Put the barley with water in a stone jar with a lid, place the jar in the oven and let the contents boil gently until the barley is very soft; then strain.

Gruel—1. A dessertspoonful of prepared groats or fine oat-meal to be moistened with a tablespoonful of cold water, and stirred till smooth; then add by degrees three-quarters of a pint of boiling water and stir over the fire till it boils; then let it simmer for eight or ten minutes. A little salt or sugar and butter may be added according to the taste of the invalid. Boiling milk may be added instead of water, but it must be constantly stirred.

2. Beat up an egg to a froth, add a wineglassful of sherry, flavor with a lump of sugar and a strip of lemon-peel and have ready some gruel, very smooth and hot; stir in the wine and egg, and serve with crisp toast. Arrow-root may be made in the same way.

Porridge—Always use coarsely ground oatmeal. Mix two tablespoonfuls of it with a small teacupful of cold water till it is of uniform consistence; then pour in a pint of boiling water, and keep boiling and stirring it for forty minutes. It is then fit for use, but may be kept simmering till wanted, if more boiling water be added as the other steams away. It should be served in a soup-plate quite hot; cold milk may be taken with it. Butter may also be added to taste, if not contra-indicated.

Arrow-root—Moisten two teaspoonfuls of arrow-root with two tablespoonfuls of cold milk. When it is quite smooth pour in half a pint of boiling milk; then place it in a bright saucepan and stir over the fire for three or four minutes. Two or three teaspoonfuls of powdered loaf-sugar may be added to sweeten it. Wine or brandy will frequently be prescribed with arrow-root; it must of course be added in the proportions ordered.

Sago—Put a dessertspoonful of sago into three-quarters of a pint of cold milk and simmer gently, stirring frequently, for an hour and a quarter; skim as it approaches boiling, and sweeten with a dessertspoonful of powdered loaf-sugar.

Tapioca and Cod-Liver—Boil a quarter of a pound of tapioca till tender in two quarts of water; drain it in a cullender, then put it back in the pan; season with a little salt and pepper, add half a pint of milk and one pound of fresh cod-liver cut in eight pieces. Set the pan near the fire to simmer slowly for half an hour or a little more, till the liver is quite cooked. Press on it with a spoon, so as to get as much oil into the tapioca as possible. After taking away the liver, mix the tapioca. If too thick, add a little milk, then boil a few minutes, stir round, salt and pepper to taste. Tapioca thus cooked is nourishing and easily digested.

Carrot-Pap—In Bednar's "Kinder-Krankheiten" the following formula occurs for carrot-pap, which is strongly recommended for children suffering from scrofula, rickets and worms, and is also suitable for patients recovering from acute diseases, and for dyspeptics.

An ounce of finely grated carrot should be put into half a pint of cold, soft water and should stand twelve hours, being frequently stirred; it should then be strained through a sieve, and all the juice pressed out. This juice is then to be thickened with grated bread or arrow root and to be set upon a slow fire. After boiling up once or twice it should be sweetened and is then ready for use.

The juice of the carrot combined with plain water, biscuits or crusts of bread, contains all the material that is necessary for the nourishment of weaned children or weakly persons—albumen, starch, gelatine, sugar, fat and salt, and finally even the phosphate of lime and phosphate of magnesia. In the preparation of this food the greatest cleanliness must be observed. The juice must be prepared fresh every day, and must, moreover, be carefully watched,

lest fermentation ensue. The large and full-grown carrots are preferable to the young and small.

Bread-Jelly—1. Take the crumb of a loaf, cover it with boiling water and allow it to soak for some hours. The water, containing all the noxious matters with which the bread may be adulterated, is then to be strained off completely and fresh added; place the mixture on the fire and allow it to boil for some time till it is perfectly smooth. The water is then to be pressed out and the bread on cooling will form a thick jelly. Flavor with anything agreeable. A good food for infants at the time of weaning; also for children with acute diseases.

2. Cut off the top of a small loaf of bread. Cut the remaining part into thin slices and toast them of a pale brown, very hard. Put the bread thus toasted into nearly three pints of water and boil very gently, until you find it well set, which you will know by holding a little in a spoon; strain it off very carefully, without breaking the bread or the jelly will be thick; sweeten to your taste. It never disagrees with and is very good for infants.

Pearl-Barley Jelly—If pearl-barley be boiled for six hours, then strained off, the water on cooling will form a nutritive jelly which dissolves readily in warm milk. It is very well adapted to infants.

Nutritive Jelly—Isinglass, 1 oz.; gum-Arabic, $\frac{1}{2}$ oz.; white sugar-candy, 1 oz.; port-wine, 1 pint; $\frac{1}{4}$ nutmeg, grated. These should be put in a jar to stand twelve hours, covered tightly to prevent evaporation; then placed in a saucepan with sufficient water to simmer till the contents of the jar are quite melted; the whole should be stirred; then allowed to stand till cool. A teaspoonful occasionally is reviving.

Orange or Wine-Jelly—A small packet of prepared gelatine should be soaked in one pint of cold water for an hour or more; three pints of boiling water should then be added with a pound and a half of sugar, the juice and grated rind of three or four oranges; the whole should be stirred together until the gelatine is dissolved and intermixed, strained through a clean cloth (jelly-bag), and allowed to cool.

If wine-jelly be preferred, it may be made in the same manner, adding sherry, Madeira or other pure wine instead of oranges, and proportionately lessening the quantity of water.

Invalid's Jelly—Soak twelve shanks of mutton in plenty of water for some hours, clean well, put them into a saucepan with one pound of lean beef, a bunch of sweet herbs, pepper and salt to taste, one onion and a crust of bread toasted brown; add three quarts of water and let them simmer gently for five hours; strain the broth; when cold take off all the fat.

Tapioca-Jelly—The tapioca should be soaked in cold water for several hours and then cooked until perfectly clear, adding more

water if necessary; when done sweeten to taste, and flavor with vanilla, lemon or wine. When cold serve plain or with cream.

Chicken-Jelly—Half a raw chicken pounded with a mallet, bones and all together; cold water to cover it well; heat slowly in a covered vessel and let it simmer until the meat is in white rags and the liquid reduced one-half; strain and press through a coarse cloth; season to taste, return to the fire and simmer five minutes longer; skim when cool. Give to patient cold, with unleavened wafers.

Arrow-root Jelly—One cup of boiling water, two teaspoonfuls of Bermuda arrow-root, one teaspoonful of lemon-juice, two teaspoonfuls of white sugar; wet the arrow-root in a little cold water and rub smooth; then stir into the hot water, which should be on the fire and actually boiling at the time, with the sugar already melted in it; stir until clear, boiling steadily all the time, and add the lemon; wet a cup in cold water, and pour in the jelly to form. Eat cold with sugar and cream.

Arrow-root Wine-Jelly—One cup of boiling water, two teaspoonfuls of arrow-root, two teaspoonfuls of white sugar, one tablespoonful of brandy or three of wine. Proceed as with preceding recipe. An excellent corrective for weak bowels.

Jelly-Water—One large teaspoonful of blackberry-jelly, one tumbler of ice-water; beat up well. Excellent for fever patients or those suffering from gastric irritation.

Iceland-Moss Jelly—One handful of moss well washed, one quart of boiling water, the juice of two lemons, one glass of wine, one quarter of a teaspoonful of cinnamon; stir the moss (after soaking it an hour in a little cold water) into the boiling water, and simmer until it is dissolved; sweeten, flavor and strain into moulds. Good for colds, and very nourishing.

Oatmeal-Tea—Pour a pint of boiling water on a tablespoonful of oatmeal, sweeten with honey and flavor with the rind of a lemon, cut very thin; stir it up, and let it stand till cool and clear. It can be warmed for drinking if required.

Barley-Water—Wash a tablespoonful of pearl-barley in cold water; then pour off the water and add to the barley two or three lumps of sugar, the rind of one lemon, and the juice of half a lemon; pour on the whole a quart of boiling water, and let it stand covered and warm for two or three hours; then strain it. Instead of lemon, currant-jelly, orange-juice or sliced licorice may be used to flavor. Barley-water is a valuable demulcent in colds, affections of the chest, etc.

Gum-Water—One ounce of gum-Arabic, half an ounce of loaf-sugar, to one pint of cold water; should stand near the fire so as to be kept warm, and be occasionally stirred until the gum is all dissolved, and should then be allowed to cool, and will form an agreeable and nourishing drink in fevers. Lemon-peel or fruit-sirup may be added to flavor.

Linseed-Tea—1. This is often a useful drink for soothing

irritation set up by the cough of consumption, bronchitis or pneumonia and for the irritation of diarrhea, dysentery, inflammation of the bowels. It is prepared by adding one ounce of bruised linseed and a half-ounce of sliced licorice-root, to two pints of boiling water and boiling in a covered vessel near the fire for two or three hours; it should then be strained through a piece of muslin and one or two tablespoonfuls taken as often as necessary. Sliced lemon and sugar-candy will make it more palatable.

2. Linseed one ounce, white sugar one ounce, licorice-root half an ounce, lemon-juice two tablespoonfuls. Pour on the ingredients two pints of boiling water, let them stand in a hot place for four hours, then strain.

Malt-Tea—Boil three ounces of malt in a quart of water. In fever cases where mouth is very dry.

Rice-Water—The best Carolina rice should be washed with cold water, then boiled in a good measure of water for ten minutes, the water strained off and more added, and so on until the goodness is boiled out of the rice. The water is ready to drink when cold. Cream may be added if there be not high fever; a pinch of salt also, if desired, or flavoring as for barley-water.

Toast-Water—1. This is not often well made. A slice of stale bread (crust is better) should be slowly baked through (not burnt), then put in a jar with a quart of boiling water poured over it and allowed to stand covered till cool. It may be flavored with lemon-peel.

2 Toast slowly a thin piece of bread until it is extremely brown and hard, but not black, put it in a jug of cold water and cover it for an hour before using.

White-Wine Whey—Put two pints of new milk in a saucepan, and stir it over a clear fire till it is nearly boiling; then add a quarter of a pint of sherry and simmer for a quarter of an hour, skimming off the curd as it rises. Then add a tablespoonful more sherry and skim again for a few minutes till the whey is clear sweeten with loaf-sugar, if required.

Tamarind-Whey—Stir two tablespoonfuls of tamarinds in a pint of milk whilst boiling; when the curds are formed, strain off. It is a cooling and slightly laxative drink.

Whey may also be made by heating milk till it almost boils, then adding the juice of an orange or lemon, or a couple of juicy apples cut in slices, or a large tablespoonful of vinegar, molasses or honey; or sufficient powdered alum or cream of tartar, or tartaric or citric acid, to cause curdling; finally, straining and sweetening to taste.

Iceland-Moss and Milk—Soak an ounce of Iceland-moss in half a pint of hot water for a quarter of an hour; strain; then boil the moss in a quart of water till it is reduced to a pint; strain again and boil the liquor (without the moss) down to a third of a

pint; mix this with half a pint of hot milk; sweeten and flavor to taste.

Rice-Milk—If milk be plentiful, the rice may be boiled in milk; if not, boil it in water to plump and soften it and when the water is wasted put in the milk, taking care that the rice in thickening does not stick to the saucepan. Season with sugar and a piece of cinnamon. A bit of lemon or orange-peel will give zest.

Sago-Milk—Soak the grains in water for an hour before boiling or boil first in water for two or three minutes, which water pour off. Boil a large spoonful in a quart of new milk; sweeten and season to taste. Ground rice may be prepared in the same way and smaller quantities used.

Milk and Meal—Mix a large teaspoonful of either parched flour or corn-flour or arrow-root or other farinaceous food, as may be indicated by special symptoms, in a little cold milk; heat a pint of milk and when it is about to boil add to it the farinaceous preparation and keep stirring while all boils together for five minutes; sweeten with sugar and flavor with lemon or nutmeg, according to taste. This is very useful when beef-tea, eggs and light puddings cannot be taken; the milk is more nutritious than when taken by itself and is less liable to turn sour. The quantity of flour, etc., may be raised. The ordinary proportion is a large dessert-spoonful to half a pint of milk.

Lemonade—1. Rub two or three lumps of sugar on the rind of a lemon, squeeze out the juice and add to it nearly a pint of cold or iced water, or better, one or two bottles of soda-water.

2. A lemon should be cut into slices and put into a jar with several pieces of loaf-sugar; add a pint of boiling water, cover and allow it to cool. After straining, it is fit for use. This beverage is recommended to allay thirst, irritation of the throat, etc. It may be made to effervesce by the addition of a very little carbonate of soda.

3. Three pounds of loaf-sugar, $1\frac{1}{2}$ pints of water, 2 ozs. of citric acid, 60 drops of essence of lemon-peel. Put the sugar into an enameled saucepan, and pour the water on it; just boil it. When half cold put in the citric acid, stir with a silver spoon, and add the essence of lemon-peel. A tablespoonful to a tumbler of water. When the lemonade is cold bottle it.

Linseed Lemonade—Four tablespoonfuls of whole linseed, one quart of boiling water, juice of two lemons. Pour the boiling water upon the linseed and steep three hours in a covered vessel; sweeten to taste; if too thick add cold water with the lemon-juice. It is admirable for colds.

Nitric Lemonade—Twenty to thirty drops of *dilute nitric acid* should be added to eight ounces of pure cold water, and flavored with honey or loaf-sugar; from a teaspoonful to a tablespoonful. according to age, may be given two or three times daily. Nitric lemonade modifies sickness in whooping-cough, and is useful in

some cases of bronchitis, consumption, coughs from relaxed palate, night-sweats, etc. Lemonade made in the same way with *sulphuric acid*, if taken daily will prevent the lead poisoning of painters.

Egg-Nog—The yolks of two eggs and half an ounce of sugar should be thoroughly rubbed together; then add four ounces of the best French brandy and four ounces of cinnamon water, and mix well.

Flummery—To any quantity of oatmeal you like to infuse put double the weight of warm water; stir well, and let the mixture infuse for four or five days in a warm temperature; add more water, stir up and strain. Let the liquid stand till the starch falls down in a white sediment, pour off the water and mixing as much of the starch or sediment as is wanted with water to thin it, boil, stirring briskly for a quarter of an hour till a jelly is formed. It is eaten with milk, butter or cream and by convalescents with wine or milk as prescribed.

White Caudle—Mix two large tablespoonfuls of finely ground oatmeal in water two hours previously to using it, strain it from the grits and boil it, sweeten and add wine and seasoning to taste; nutmeg or lemon-juice answers best.

Apple Water—To juicy apples sliced, add a little sugar and lemon-peel; pour over them boiling water; strain when cold.

Cream for Stewed Fruit—Boil an ounce and a half of gelatine in a pint and a half of water over a slow fire till there is only half a pint. Strain and sweeten, add a glass of sherry and stir in half a pint of good cream; stir till cold.

Fruit Cream—Gooseberries, apples, rhubarb or any fresh fruit may be used. To every pint of pulp add one pint of milk or cream; sugar to taste; prepare the fruit as for stewing, put it into a jar with two tablespoonfuls of water and a little good, moist sugar; set the jar in a saucepan of boiling water and let it boil until the fruit is soft enough to mash; then beat it to a pulp and work this pulp through a cullender. To every pint stir in the above proportion of milk or cream; if obtainable the latter is of course preferable.

Cocoa from Nibs—To produce cocoa from nibs, one of the most wholesome and nutritious of beverages, the following method is recommended. For two persons, take of Fry's No. 1 nibs a small teacupful and soak them in one quart of water over night; next morning boil briskly for two hours, then strain off and use directly with boiling milk. It should not be re-warmed as it loses its flavor, just as tea does when warmed up again.

The best way of boiling it is in a block-tin, three-pints wine-muller, over a small gas-stove; or, better still, the new French milk-saucepan, which consists of white ware fitted into an outside tin casing. The cocoa nibs, already soaked as previously directed, should be put with a proper quantity of water into the white ware,

the outside vessel being also filled with water and boiled for two hours.

Nutritious Coffee—Dissolve a little gelatine in water, then put half an ounce of freshly ground coffee into a saucepan with a pint of new milk, which should be nearly boiling before the coffee is added, boil both together for three minutes, clear it by pouring some into a cup and dashing it back again, add the isinglass and leave it to settle for a few minutes. Beat up an egg and pour the coffee upon it, or if preferred drink it without the egg.

Nutrient Enema—Take of beef-tea half a pint and thicken it with a teaspoonful of tapioca. Reduce $1\frac{1}{2}$ ozs. of raw beef to a fine pulp, pass it through a fine cullender and mix the whole with twenty grains of acid pepsin and four grains of diastase (or a dessertspoonful of malt-flour); where the latter is used the tapioca may be omitted. It should have a bright rose-tint and exhale a rich, meaty odor. Not more than a quarter of a pint should be used at a time and that slowly. Pending the arrival of the pepsin and the malt, the other portions of the liquid may be administered alone.

Egg and Sugar Enema—Beat up the yolks of two eggs with two wineglassfuls of hot water in which an ounce of lump-sugar has been dissolved.

Oil and Sugar Enema—Gradually rub up half an ounce of gum-Arabic with two tablespoonfuls water; then gradually add and rub in two tablespoonfuls of olive-oil or cod-liver oil; then stir in a wineglassful of hot water in which an ounce of lump-sugar is dissolved.

Panada—Slice the crumb of a loaf very thin and soak or boil it gently in water. When soft, beat it up well and add sugar and if allowed, wine; a little butter may also be added. Panada may also be made of chicken-broth instead of water and seasoned with a little mace, and is excellent for invalids.

HOW TO BECOME FAT OR PLUMP.

Activity of mind or body prevents fattening. Sufficient rest and sleep must be taken. Persons who desire to become plump and remain so should retire about 9 or 10 p. m., and sleep until 6 or 7 a. m. A brain-worker needs more sleep than a muscle-worker. Pleasure or recreation, before going to bed at night is desirable. A drink of water should be taken immediately on rising. It should be fresh water, and not that which has stood in lead pipes or in a pail, nor should it be too cold. The breakfast should be plain and substantial, the year round, especially in summer. A course of fresh ripe fruit should first be eaten, then potatoes, meat or fried mush. or oat-meal porridge, bread and butter. The drink may be cocoa or milk-and-water, sweetened. If tea or coffee is used, it should be weak, and taken with plenty of milk. A drink of water may be



HOW TO BECOME FAT OR PLUMP.

This is more easily accomplished than is generally supposed.

By following the instructions on page 378 lean or spare persons will become fleshy or plump.

taken an hour or two after a meal; it aids digestion. If one become faint before dinner, a cracker should be taken with a glass of water. The hearty meal of the day should not come later than five hours after breakfast. Soup should be taken at this meal; it helps digestion. There are certain Brahmins or Priests in Asia who are very corpulent. Their diet consists of vegetables, milk, sugar, sweet-meats and "ghee." Dr. Fothergill states that a strict vegetable diet produces fat more certainly than any other means. Condiments, spices and stimulants should not be taken, unless they are very mild. Much cold water, at meal-times, should be avoided. It chills the stomach. Every meal should be eaten slowly and with pleasant company, and a half hour, at least, of rest taken afterwards, if possible. If a full, hearty meal lies heavily on the stomach, as it often does, with dyspeptics, a drink of hot water, sweetened or salted to the taste, aids much to complete digestion. About 3 or 4 P. M., a drink of water should be taken. Supper should be light; bread-and-butter and tea, with some mild sauce. Children and old people should retire early.

Another method of becoming plump is a free diet of oysters. They may be taken in any form, raw or cooked, but they should be eaten without vinegar or pepper. To sum up, then: to become plump, one must use plenty of water, starchy food, oysters, fats, vegetables, sweets, and take plenty of rest.

CHEWING GUM.

The habit of chewing spruce or any other gum is not only filthy and unpleasant, but is also destructive to health, and parents cannot be too careful to guard their children against it. If the chewer spit the saliva from his mouth its loss weakens and exhausts his whole system and seriously impairs his digestion; for the saliva contains important properties which are all needed and are essential in the process of digestion. If the saliva be swallowed, impregnated as it is with the stimulating properties of the gum, it causes inflammation of the stomach, and often serious and troublesome diseases of this character are thus caused. It also not infrequently leads the young to the use of tobacco.

DIVISION EIGHTH.

THE SICK-ROOM.

NURSING THE SICK.

The services of an intelligent, experienced nurse form a part of the treatment of the sick quite as essential as the administration of medicine. To aid her to some extent in the performance of this duty, the following general hints are offered: Particular instructions suited to various diseased conditions are given, when needful, throughout the book, under "Accessory Treatment." Special directions concerning infectious fevers are given in the section on "Typhoid Fever." In serious and difficult cases the medical attendant alone can furnish instructions adapted to the peculiarity of each case, and it is the nurse's duty faithfully to carry out his directions and to report to him at each visit the effects of the treatment.

The following points should be kept in view: The apartment should be airy. A spacious, well-ventilated room, allowing an uninterrupted admission of fresh and the free escape of tainted air, is a valuable element in the management of the sick. Fresh air can only be insured by an open window or door, or both.

In ventilating a sick-room, you should be careful as to the source of the air which you let in. Never air a room from another room that has been closed up tight for days previously, nor from a hall which is itself seldom properly aired. The air which you let into the room should not come from a filthy locality, nor from a kitchen, nor underground or basement room. A fireplace or grate in a room is greatly to be preferred to a stove, and the fireplace should never be closed. Some people, as soon as the season for having fires is over, close up the fireplaces of the rooms where a fire is not necessary. This is bad; a fireplace should never be shut up; it serves, when open, whether with or without fire, as a most important ventilator, an escapement or draught through which the air may constantly change. By opening a window a little, say at the top, or if this cannot be done, by taking out one of the upper lights, and making a brisk fire in an open fireplace, a fine draught and plentiful supply of fresh air can be obtained and the room kept properly ventilated. And this should always be done, except in

the most extreme hot weather. You need have no fear of the patient taking cold under such circumstances. Of course, the patient is to be in bed and well supplied with the necessary covering; you will find that patients do not take cold while in bed, and it is better even to make use of artificial heat, by applying about the patient's feet, legs and body warm bricks or bottles of hot water, than to close the room and permit the patient to breathe impure air. When patients first get out of a warm bed is the time they are most likely to take cold. Great care, then, should be exercised in keeping them warmly wrapped. Cleanliness of the skin and clothing, pure air for breathing and proper food, are the chief essentials for the sick. Yet how few are thus properly cared for; and, not infrequently, the result is the death of the patient, when to an inscrutable Providence, improper remedies or an incompetent physician, is attached the blame which should rest upon an ignorant or negligent nurse.

Another extraordinary fallacy is the dread of night-air. What air can we breathe at night, but night-air? The choice is between pure night-air from without and foul night-air within. Most people prefer the latter—an unaccountable choice. What will they say if it is proved to be true that fully one-half of all the disease we suffer from is occasioned by people sleeping with their windows shut? An open window most nights in the year can never hurt any one. In great cities night-air is often the best and purest air to be had in the twenty-four hours.

During infectious diseases, besides diluting the poison with an abundance of atmospheric air, dilute carbolic acid, especially prepared for use in the sick-room, may be used as an efficient and agreeable disinfectant. The same solution should be frequently sprinkled about the floors, bedclothes, handkerchief, etc., and be diffused through the room by a spray-producer. It acts quickly as an efficient disinfectant. It may also be used for personal disinfection—a point often but indifferently carried out—by adding it to the water in which the patient is washed, and is a valuable substitute for aromatic vinegar. It also makes an excellent gargle for sweetening the breath of fever-patients. It is also useful to visitors of the sick, to prevent the risk from infectious diseases; for this purpose a few drops should be sprinkled on the handkerchief before entering the sick-room. Perfumed carbolic acid, which may be procured already prepared for use, will be found much more agreeable than ordinary preparations of the pure acid.

To the same end the room should be divested of all superfluous furniture, carpets, bed-hangings, etc.

The room should be provided with a second bed or convenient couch to which the patient should, if possible, be removed for a short time, at least once in the twenty-four hours. This insures a change of atmosphere around the patient's body, and at the same time allows the bed to be aired.

The sick room should be quiet. Silk dresses and creaky boots, the crackling noise made by handling a newspaper, etc., often distress invalids; the tones of the voice should be gentle and subdued, but whispering is to be avoided; all unnecessary conversation and noise must be forbidden.

The temperature of the room should be ascertained by a thermometer, as the sensations of the nurse cannot be depended upon as a sufficient guide; a thermometer, suspended beyond the influence of a current of air or the direct heat of the fire, will correctly indicate the temperature of the room. The temperature may be varied according to the nature of the disease from which the patient suffers. In fevers, inflammation of the brain, etc., about 55° will be the proper warmth; in inflammation of the lungs and bronchitis, a higher temperature is necessary— 60° and upwards. In all inflammatory affections of the chest the air should be warm and also moist, so as not to irritate the inflamed lining of the air-tubes. Cold air and too many bed-clothes are sure to increase the mischief. Under all circumstances it must be remembered that the temperature considered necessary is on no account to be maintained by excluding fresh air from the room, and making the patient breathe, over and over again, the air which has already been made impure.

Patients suffering from infectious diseases should be isolated, if possible, and occupy a room on an upper story, to prevent the spread of the infection to others; for infectious exhalations, being lighter than air, ascend. Mothers, who frequently go in and out of the room, might keep a loose cotton-gown ready to put on over their other dress whenever they enter it before waiting on the infected patient, and to be taken off again and left in the room when leaving.

In most cases of illness, especially at the commencement, cold water, barley-water, gum-water, raspberry-vinegar and water, apple-water, toast and water, lemonade and soda-water, all demulcent beverages, are nearly all that are necessary. There is sometimes a foolish objection raised to allowing cold water to be given to a patient; but it is not only most refreshing to the sick person, but also an agent of supreme importance, lowering excessive heat, giving vigor to the relaxed capillaries and accelerating favorable changes. The quantity of cold water given at a time should be small—one to two tablespoonfuls—and repeated as often as desired. Sucking ice is useful and grateful.

Food not to be Kept in the Sick-room—Miss Nightingale's suggestion on this point is worth repetition here. It is this; do not keep the food, drink or delicacies intended for the patient, in the sick-room or within his sight. The air and temperature of the apartment are liable to hasten putrefactive decomposition, especially in hot weather, and the continuous sight of them to cause disgust. Rather take up for him, at the fitting time, and

by way of surprise, two or three teaspoonfuls of jelly, or as many fresh grapes as he may consume at once, or the segment of an orange; or, if it be appropriate to his condition, a small cup of beef-tea, covered with one or two narrow slips of toasted bread, just from the fire. This is very much preferable to offering even a less quantity from a basinful that has been kept for many hours within reach of the patient's hand and eye.

Information upon Moderation in Convalescence, Change of Air on Recovery from Illness, etc., may be found in the section on "Typhoid Fever."

Bathing—The nurse, before commencing to bathe the patient, should provide herself with water, two towels, a sponge, a piece of soft flannel and a sheet; the temperature of the room should also be observed. Use cold or warm water as may be more agreeable to the patient's feelings. Before using the sponge to bathe, a sheet or fold of cloth should be spread smoothly over the bed and under the patient, to prevent the bed-linen on which the patient lies from becoming damp or wet.

Apply the wet sponge to one part of the body at a time, as the arm for instance. By doing so, liability to contracting chills is diminished. Take a dry, soft towel, wipe the bathed part, and follow this by vigorous rubbing with a crash towel, or, what is better, a mitten made of this material; then use briskly a piece of soft flannel, to remove all moisture that may exist on the skin, and particularly between the fingers and the flexions of the joints. In this manner bathe the entire body.

The sick should be thoroughly bathed at least once in twenty-four hours. Particular attention should be given to the parts between the fingers and toes, and about the flexions of the joints, as the accumulation of the excretions is most abundant on these parts. In bathing, these portions of the system are very generally neglected. The best time for bathing is when the patient feels most vigorous and freest from exhaustion. The practice of daubing the face and hands with a towel dipped in hot rum, camphor or vinegar, does not remove the impurities, but causes the skin soon to feel dry, hard and uncomfortable.

Food—It is the duty of every woman to know how to make the simple preparations adapted to a low diet, in the most wholesome and the most palatable way. Water-gruel, which is the simplest of all preparations, is frequently so ill-made as to cause the patient to loathe it. Always prepare the food for the sick in the neatest and most careful manner.

When the physician enjoins abstinence from food, the nurse should strictly obey the injunction. She should be as particular to know the physician's directions about diet, as in knowing how and when to give the prescribed medicines, and obey them as implicitly.

When a patient is convalescent, the desire for food is generally strong, and it often requires firmness and patience, together with

great care on the part of the nurse, that the food be prepared suitably, and given at proper time. The physician should direct how frequently it should be taken.

Bed-linen, as well as that of the body, should be aired every day, and oftener changed in sickness than in health. All clothing, when changed, should be well dried and warmed by a fire previous to its being put on the patient or the bed.

Darkening the Sick-room—It is a common error to imagine that a sick-room should always be either partially or wholly darkened. In some diseases, as for example fevers, when the eyes are acutely sensitive to light so that they remain half-closed, and the eyebrows are contracted, the greatest relief is experienced from darkening the room. When delirium is present, a certain degree of darkening is, in some instances serviceable; while in others, especially when the delirium is accompanied with visual illusions, nothing so readily dispels these, and consequently abates the delirium, as the admission of the full daylight into the sick-room. There is much difficulty, however, in determining which state of the apartment is likely to be most serviceable in any particular case. Observation of the effects of light and darkness in the individual case must be our guide.

Beds—There is probably more injury done to the sick and more-lives lost through the ignorance of the nurse in regard to the bed and bedding than in any other thing. To say the least, the condition of many beds is an outrage to the suffering patient. The careful nurse is very particular about airing the sheets every day, but too little attention is generally paid to the equal necessity for airing the mattress. A mattress will soon become saturated with the unhealthy, poisonous emanations from the patient's body; from this arises a dampness, either cold or warm, as the case may be, which returns upon the patient, to be inhaled and absorbed into the system, and this unhealthy process, in case of this neglect, is kept up during the whole course of his sickness.

A patient should not be allowed to lie on the same mattress more than forty-eight hours at a time; twenty-four hours is better. It should then be exchanged for a well-aired one, and subjected to a thorough airing and sunning; by no means let it be slipped underneath another on the same bed, as is sometimes done.

The frequent changing and airing of the mattress is of vastly greater importance than the same necessity with the sheets, for the reason that it will catch and contain vastly more poisonous effluvia than sheets will, and will give it off again, to the great injury of the patient. The exhalations from the patient's body are constantly passing off by perspiration, and gradually and constantly passing into his bed.

It may be worth while to remark, that where there is any danger of bed-sores, a blanket should never be placed *under* the patient. It remains damp and acts like a poultice.

Never use anything but light Whitney-blankets, as bed-covering for the sick. The heavy, cotton, impervious counterpane is bad, for the very reason that it keeps in the emanations from the sick person, while the blanket allows them to pass through. Weak patients are invariably distressed by a great weight of bed-clothes, which often prevents their getting any sound sleep whatever.

Never place a patient on such a detestable thing as a *feather-bed*. Mattresses should be used for this purpose, and those made of hair are the best.

As regards pillows, it must be borne in mind that every weak patient, be his illness what it may, suffers more or less from difficulty in breathing. To take the weight of the body off the poor chest, which is hardly up to its work as it is, ought therefore to be the object of the nurse in arranging his pillows. Now what does the uninstructed nurse do, and what are the consequences? She piles the pillows, one a-top of the other, like a wall of bricks. The head is thrown upon the chest, and the shoulders are pushed forward so as not to allow the lungs room to expand. The pillows, in fact, lean upon the patient, not the patient upon the pillows.

Beds for the sick, as well as for those in health, should not be too low; neither should they be at the other extreme—that is, too high. The height to the top of the upper mattress should not exceed eighteen inches or two feet.

If the patient is too high, especially if the ceiling is low, he will be above the current of fresh air and in that which is heated and impure. Care should be had also not to have the bed too low, or the patient will be in the cold, damp and equally unhealthy air which settles near the floor of the room. The best criterion is to have the position of the patient as nearly as possible on a level with the top of the fireplace, as he will then be in a current of the best air in the room.

The bed should never be placed against the wall, nor in the corner of the room, the reasons for which will appear to every intelligent nurse. If possible, it should be in the lightest part of the room and where the patient can look out of the window.

If possible, the bed should be made night and morning. And sometimes during the day and night the bed-clothes should be raised up from the body and let fall again, so as to drive out the confined air; or they should be thrown back towards the feet, to allow a full airing. If possible, the head of the bed should be placed towards the north.

Proper Time and Punctuality in Giving Food—
Punctuality in giving food is of the utmost importance. With very weak patients, life itself may hang upon a few minutes. A spoonful of nourishment, given at the right time, may turn the scale and save the patient's life; whereas, if it had been delayed fifteen minutes longer, it might have been too late. Where patients are very weak and can take but little nourishment at a time, it is of

the utmost importance that it be given with scrupulous punctuality.

In the case of a large majority of very weak patients it is quite impossible to take any solid food before 10 or 11 A. M., nor then, if their strength is still further exhausted by fasting till that hour; for weak patients have generally feverish nights and in the morning dry mouths; and if they could eat with those dry mouths it would be the worse for them. A spoonful of beef-tea or arrow-root and wine, or of egg-flip every hour, will give them the requisite nourishment and prevent them from being too much exhausted to take, at a later hour, the solid food which is necessary for their recovery. Again, a nurse is ordered to give a patient a teacupful of some article of food every three hours. The patient's stomach rejects it. If so, try a tablespoonful every hour; if this will not do, a teaspoonful every quarter of an hour.

It should be better known that there are many lives lost for the want of proper care and ingenuity at these momentous times.

Patients' lives have been saved when they were sinking for the want of food, by the simple question put to them by the doctor, "But is there no hour when you feel you could eat?" "Oh, yes, I could always take something at — o'clock and — o'clock." Patients very seldom, however, can tell this—it is for you to watch and find it out.

A patient should, if possible, not see or smell either the food of others or a greater amount of food than he himself can consume at one time, or even hear food talked about or see it in the raw state.

The above is applicable mainly to patients who are in a very feeble state of health from exhaustion through the want of nourishment. Hence in all these cases there are much judgment and discretion to be exercised by the nurse. The general rule is, "*never urge a patient to eat*;" he will know better than you when he needs food. Also, as to what he should eat, he may know better than you. If he crave any particular thing the chances are that it will not hurt him. The diet should be light, nourishing and easy of digestion. But recollect that the patient does not need much food. This will apply to all cases of acute disease. In diseases of long standing, where there is little or no fever, the rule will be somewhat different; a light diet may not be so necessary. In cases of recent attacks of fever or acute diseases of the bowels, food, especially animal food, urged upon a patient simply because it is thought he ought to eat something, is likely to do more harm than for him to go without food for three days. Indeed, the abstinence from food for that time, or even longer, might be the best possible way to save the patient's life. The best rule in all cases of recent or acute diseases is, *never to give the patient food unless he desires it*; and then to *let him have what he wants or prefers, if you know it cannot hurt him*.

Moisture and Impurities Produced in the Room—
There ought to be nothing in the room, besides the patient, that can

give off effluvia or moisture. The damp from towels, or any other article hung up to dry, goes into the air the patient is to breathe. One of the worst habits is that of leaving the chamber-vessel with its contents under the bed. A vessel for such purposes should never be left standing in the room for one moment with its contents—though it contain nothing but urine—*without being well covered*; and if ever so well covered, it should be emptied immediately and well cleansed, lid and all. Day and night, make this an invariable rule in a sick-room.

There should be no standing liquid of any description in a sick-room, not even the purest cold water; because the cold water causes the tainted atmosphere of the sick-room to settle on its surface and condense into oily drops, to drink which would be disgusting. If not drunk, the same particles are made gaseous by the warm air of the room, are evaporated, mingled with the air and breathed into the lungs.

All medicines, bottles and vials, or anything else which reminds of medicine, should be kept out of sight, except at the moment of administering them.

The use of a chamber-vessel without a lid should be abolished, whether *among sick or well*. You can easily convince yourself of the necessity of this absolute rule by taking one with a lid and examining the underside of that lid. It will be found always covered, whenever the utensil is not empty, by condensed, offensive moisture. Where does that poisonous substance go when there is no lid?

Earthenware, or if it can be conveniently procured, highly polished and varnished wood, are the only materials fit for patients' utensils.

A slop-pail should never be brought into a sick-room or any other. It should be an invariable rule that the utensil should be carried directly to the water-closet, emptied there, rinsed there and brought back. There should always be water and a cock in every water-closet for rinsing. But even if there is not, you must carry water there to rinse with. Says a physician, "I have actually seen, in the private sick-room, the utensil emptied into the foot-pan and put back unrinsed under the bed. I can hardly say which is more abominable—whether to do this or to rinse the utensil in the sick-room."

External Applications—The feet and legs should be examined by the hand from time to time, and whenever a tendency to chilling is discovered, hot bottles or warm flannels, with some warm drink, should be made use of until the temperature is restored. Patients are frequently lost in the latter stages of disease, from want of attention to such simple precautions. The nurse may be trusting to the patient's diet, or to his medicine, which she is directed to give him, while the patient is all the while sinking from want of a little external warmth. Such cases happen even during the height of summer. This fatal chill is most apt to

occur toward early morning, at the period of the lowest temperature of the twenty-four hours, and at the time when the effect of the preceding day's diet is exhausted.

Talking Business to a Sick Person—Always sit down when a sick person is talking business to you, show no signs of hurry and go away the moment the subject is ended.

Always sit within the patient's view, so that when you speak to him, he has not painfully to turn his head round in order to look at you. If you make this act a wearisome one on the part of the patient, you are doing him harm. So also if, by continuing to stand, you make him continuously raise his eyes to see you. Be as motionless as possible and never gesticulate in speaking to the sick.

Mere visitors should not be allowed to remain in the sick-room more than five minutes, just long enough to allow a friendly greeting and the expression of a hope that soon all will be well again, with the communication of such intelligence as might make a pleasant impression on the mind.

Sitting on the Bed of a Patient—Remember never to lean against, sit upon, or even touch the bed in which a patient lies. This is a painful annoyance. If you shake the chair upon which he sits, he has a point by which he can steady himself, in his feet. But on a bed or sofa, he is entirely at your mercy, and he feels through his whole system every jar you give him.

Conversation and Noise—It is a matter of surprise that the friends of patients, and even many doctors, should exhibit so much thoughtlessness or lack of good sense, often resulting in unintentional cruelty, as to hold a long conversation in the room of the patient or in a passage adjoining it. If it is a whispered conversation in the same room, then it is absolutely cruel, for it is impossible that the patient's attention should not be strained to hear. Walking on tip-toe, or doing anything in the room very slowly, is injurious for the same reasons. A firm, light, quick step, a steady, quick hand, with every act and look tempered with gentleness of disposition and kindness of heart, are qualities most desirable in the sick-room; not the slow, lingering, shuffling foot, the timid, uncertain touch, the boisterous word or laugh, or the look of anxiety and despair.

Variety and Change—The effect, in sickness, of beautiful objects, especially those of variety and brilliancy of color, is hardly at all appreciated; yet they are actual means of recovery. But it should be a slow variety; for example, if you show a patient ten or twelve engravings successively, ten to one that he becomes cold and faint or feverish, or even sick; but hang one up opposite him, one on each successive day, or week, or month, and he will revel in the variety.

Nurses vary their own objects, their own employments, many times a day; and yet, while nursing some bed-ridden sufferer, they

are liable to let him lie there staring at a dead wall without any change of object to enable him to vary his thoughts, and it never even occurs to them at least to move his bed so that he can look out of the window. No; the bed is to be always left in the darkest, dull-est, remotest part of the room.

On Leaving the Sick Room—Always tell a patient, and tell him beforehand, when you are going out and when you will be back, whether it is for a day, an hour or ten minutes. If you go without his knowing it and he finds it out, he never will feel secure again that the things which depend upon you will be done when you are away, and in nine cases out of ten he will be right. If you go out without telling him when you will be back, he can take no measures or precautions as to the things which concern you both, or which you do for him. You should be prompt to return at the appointed time, and all will who are worthy of being called nurses.

The nurse requires knowledge and practice to enable her to discharge aright her duty to the patient, quite as much as the physician and surgeon do to perform what is incumbent on them. Woman, from her constitution and habits, is the natural nurse of the sick; and in general no small portion of her time is spent ministering at the couch of disease and suffering.

No girl should consider her education complete, who is not acquainted with the principles of the duties of a general nurse and a temporary watcher.

Up to a few years ago, while we had medical schools and colleges to educate physicians, there were but few institutions to educate nurses in their equally responsible calling, but there are now training schools for nurses in all large cities, and every woman who chooses nursing as a profession, or a means of livelihood, should take a course of instruction at one of these schools. Where this education is absent, or in case of non-professional persons, the instructions here given should be carefully studied and put into practice in attendance upon the sick. The study of Hygiene, or the laws of health, should also be made a portion of the education of every girl.

Quiet—The room of the patient should be kept free from noise. The family and friends of the sick should be guided by this rule, that no more persons may remain in the room of the sick than the welfare of the patient demands. It is the duty of the physician to direct when visitors can be admitted or excluded from the sick-room, and the nurse should see that these directions are enforced.

It is the duty of the nurse to ascertain the normal habits of the patient as respects the period of eating and sleep when in health, that she may prepare the food and arrange the sick room in accordance with the practice of the patient. If the person who is sick is ignorant of the necessity of the removal of the waste products from the system, the nurse should invite attention to these functions at such periods as are in accordance with the previous habits of the patient.

The deportment and remarks of the nurse to the patient should be tranquil and encouraging. The illness of a friend, or death of any person, should not be alluded to in the sick-room. No doubt or fear of the patient's recovery, either by a look or by a word, should be expressed or intimated by the nurse, in the chamber of the sick. When such information is necessary to be communicated, it is the duty of the physician to impart it to the sick person.

The nurse should not confine herself to the sick-room more than six hours at a time. She should eat her food regularly, sleep at regular periods, and take exercise daily in the open air. To do this, let her quietly leave the room when the patient is sleeping. A watcher, or temporary nurse, may supply her place. There is but little danger of contracting disease if the nurse attend to the simple laws of health and remain not more than six hours at a time in the sick-room.

Directions for Watchers—These necessary assistants, like the nurse, should have knowledge and practice. They should ever be cheerful, kind, firm and attentive in the presence of the patient.

A simple, nutritious supper should be eaten before entering the sick-room, and it is well, during the night, to take some plain food.

When watching in cold weather, a person should be warmly dressed and furnished with an extra garment, as a cloak or shawl, because the system becomes exhausted towards morning and less heat is generated in the body.

Light-colored clothing should be worn by those who have the care of the sick in preference to dark-colored apparel, particularly if the disease be of a contagious character. Experiments have shown that black and other colors will absorb more readily the subtle effluvia that emanates from sick persons, than white or light colors.

Whatever may be wanted during the night should be brought into the sick chamber or the adjoining room, before the family retire for sleep, in order that the slumbers of the patient be not disturbed by haste or searching for needed articles.

The same general directions should be observed by watchers, as are given to the nurse; nor should the watcher deem it necessary to make herself acceptable to the patient by exhausting conversation.

It can hardly be expected that the farmer who has been laboring hard in the field, or the mechanic who has toiled during the day, is qualified to render all those little attentions that a sick person requires. Hence, would it not be more benevolent and economical to employ and pay watchers, who are qualified by knowledge and training, to perform this duty in a faithful manner, while the kindness and sympathy of friends may be practically manifested by assisting to defray the expenses of these qualified and useful assistants?

The Nurse—When all the arrangements are completed in the sick-room, little benefit can be anticipated if a proper nurse be not obtained to render them available to the invalid. Care should be taken to secure, if practicable, a nurse trained at some of the schools which are now available, and if a qualified professional nurse cannot be secured, a person in good health, active, of cheerful disposition, and pleasant, sympathetic temperament, should be chosen, who should be guided by the rules here given.

The nurse should not be under twenty-five nor above fifty-five years of age. This period is fixed upon on account both of the physical powers and the moral conduct of the individual. Under twenty-five the strength of a woman has not reached its maturity, and is scarcely adequate for lifting patients in and out of bed, and for many other duties which require strength, connected with the office of a nurse; but the strength and the muscular power in females begin to fail after fifty-five, when the natural transition from maturity to decay takes place.

A woman of a naturally delicate frame of body is unfit for a sick-nurse; at the same time, a coarse, heavy and masculine woman is, for many reasons, objectionable. While strength is requisite, the frame should be such as to indicate activity.

None of the qualifications of a sick-nurse is more important than health. An individual who herself requires attention is ill-calculated to attend upon others. A woman who is asthmatic, or has any difficulty of breathing or an habitual cough; who is rheumatic or gouty, or has any spasmodic affections; who is afflicted with palpitation or suffers from periodical headache, vertigo or a tendency to paralysis, or who is consumptive or scrofulous, or has defective sight or hearing or anything which causes decrepitude, is disqualified for a sick nurse. It is important, also, to ascertain that the nurse is not hysterical nor predisposed to mental depression.

An attendant upon the sick should possess a happy, cheerful, equal flow of spirits, a temper not easily ruffled and kind and sympathetic feelings; but, at the same time, not such as to interfere with firmness of character. The expression of the countenance should be open and winning, so as to attract the good will and confidence of the invalid; a pleasing and gentle manner being more likely to gain esteem and insure obedience to the orders of the physician than the most persuasive arguments which can be addressed to the understanding of the patient.

A collected, cheerful expression of the countenance in the attendant on the sick is likely to inspire hope and to aid the efforts of the physician for the recovery of his patient.

The general disposition of a sick nurse should be obliging. Every little office which the invalid may require to be done should be performed at once and without the smallest apparent reluctance, even when the necessity for its immediate performance is not

absolute. There is also an earnestness of manner which should, if possible, be acquired or acquiesced in by the sick-nurse, as it impresses the idea that she feels deeply interested in the case, a circumstance which is always highly appreciated by the patient.

It ought to be unnecessary to say that a nurse should be honest, as no description of servant has so much in her power. But the honesty of the nurse is not to be measured by her respect for property; she must be above imposing on the physician, with respect either to medicines or to diet. In her habits she should be sober, active, orderly, and clean and neat in her person.

It may appear a refinement to talk of the education of a nurse, but there is not a greater difference between noon-day and midnight than between an educated and an ignorant nurse. The former is often an aid to the physician, not only in carrying his orders into effect, but by observing and informing him of symptoms of great importance which have occurred during his absence; whereas the latter is a source of constant anxiety and too often assumes the privilege of acting in direct contradiction to his orders, and according to her own opinion.

To prevent Infection—In every case of infectious disease, the attendants, even in the best ventilated rooms, should stand on the windward, or on that side of the sick-bed from which the current of air comes, as by neglect of this rule and by standing in the current which has passed over the patient, the infectious exhalations are blown upon them in a direct stream from the body of the patient. The attendants should never lean over the sick, nor should they receive their breath. The health also of the nurses should always be supported by nutritious and generous diet, but not by brandy or any other ardent spirit.

Light—Patients should be able, without raising themselves or turning in bed, to look out of the window from their beds. To see the sky and sunlight at least, if you can show them nothing else, is held to be, if not of the very first importance for recovery, at least something very near it, and you should look to the position of the beds of your sick, as one of the first essentials. Again, the morning sun and the mid-day sun—the hours when they are quite certain not to be up—are of more importance to them, if a choice must be made, than the afternoon sun. But the best rule is, if possible, to give them direct sunlight from dawn to sunset.

A great difference between the bed-room and the sick-room is that the sleeper has a very large supply of fresh air to draw upon when he begins the night, if his room has been open all day as it ought to be.

Cleanliness—Prof. Scudder of Cincinnati, makes the following observations on this subject: "Compare the dirtiness of the water in which you have washed when it is cold without soap, cold with soap, hot with soap. You find the first has hardly removed any dirt at all, the second a little more, the third a great deal more.

But hold your hand over a cup of hot water for a minute or two and then, by merely rubbing with the finger, you will bring off flakes of dirt or dirty skin. After a vapor bath you may peel your whole self clean in this way. What I mean is, that by simply washing or sponging with water you do not really cleanse your skin. Take a rough towel, dip one corner in very hot water (if a little spirit be added it will be more effectual), and then rub as if you were rubbing the towel into your skin with your fingers. The black flakes which will come off will convince you that you were not clean before, however much soap and water you may have used. These flakes are what require removing. And you can really keep yourself cleaner with a tumbler of hot water and a rough towel and rubbing, than with a whole apparatus of bath and soap and sponge without rubbing. It is nonsense to say that anybody need be dirty. Patients have been kept as clean by these means on a long voyage, when a basinful of water could not be afforded and when they could not be moved out of their berths, as if all the appurtenances of home had been at hand.

“Washing, however, with a large quantity of water, has quite other effects than those of mere cleanliness. The skin absorbs the water and becomes softer and more perspirable. To wash with soap and soft water is, therefore, desirable from other points of view than that of cleanliness.”

There are some common errors prevalent among those who have the care of the sick, in reference to diet, a few of which we shall mention.

One is the belief that beef-tea is the most nutritive of all articles. Now, boil a pound of beef into beef-tea; evaporate your beef-tea, and see what is left of your beef. You will find that there is barely a teaspoonful of solid nourishment to half a pint of water in beef-tea; and although there is a certain nutritive quality in it, yet there is little to be depended upon with the healthy or convalescent, where much nourishment is required. Again, it is an ever-ready saw that an egg is equivalent to a pound of meat, whereas it is not at all so; while moreover it is seldom noticed with how many patients, particularly of nervous or bilious temperament, eggs disagree. All puddings made with eggs are distasteful to them in consequence. An egg whipped up with wine is often the only form in which they can take this kind of nourishment. Arrow-root is another grand dependence of the nurse. As a vehicle for wine, and as a restorative quickly prepared, it is all very well; but it is nothing but starch and water. Flour is both more nutritive and less liable to ferment and is preferable wherever it can be used.

Again, milk and the preparations from milk are a most important article for the sick. Butter is the lightest kind of animal fat, and though it lacks the sugar and some of the other elements which are in milk, yet it is most valuable both in itself and in enabling the patient to eat more bread. Flour, oats, barley and their kind

are preferable to all the preparations of arrow-root, sago, tapioca and food of that class. Cream, in many long, chronic diseases, is quite unsurpassed by any other article whatever. It seems to act in the same manner as beef-tea and to most it is much easier of digestion than milk. In fact, it seldom disagrees.

Sour milk, however, should be used with caution, as there are some diseases in which it is injurious. Buttermilk, a totally different thing, is often very useful, especially in fevers.

In laying down the rules of diet, by the amounts of solid nutriment in different kinds of food, it is a constant error to lose sight of what the patient requires to repair his waste; what he can take, and what he cannot. The nurse's observation here will materially assist the doctor; the patient's fancies will materially assist the nurse.

"In the diseases produced by bad food, such as dysentery and diarrhea in cases of scurvy, the patient's stomach often craves for and digests things some of which would be laid down in no dietary that ever was invented for sick, and especially not for such sick. These are fruit, pickles, jam, gingerbread, fat of ham or bacon, suet, cheese, butter, milk. These cases I have seen not by ones, nor by tens, but by hundreds; and the patient's stomach was right and the book was wrong. The articles craved for, in these cases, might have been principally arranged under the two heads of fat and vegetable acids.

"There is often a marked difference between men and women in this matter of sick feeding. Women's digestion is generally slower."— *Dr. Gunn*.

Jelly is another article of diet in great favor with nurses and friends of the sick; but it is now known that jelly does not nourish—that it has a tendency to produce diarrhea, and to trust to it to repair the waste of a diseased constitution is simply to starve the sick under the guise of feeding them. If one hundred spoonfuls of jelly were given in the course of the day, you would have given one spoonful of gelatine, which spoonful has no nutritive power whatever.

And, nevertheless, gelatine contains a large quantity of nitrogen, which is one of the most powerful elements in nutrition; on the other hand beef-tea may be chosen as an illustration of great nutritious power in sickness coexisting with a very small amount of solid nitrogenous matter.

Dr. Christison says that "every one will be struck with the readiness with which" certain classes of "patients will often take diluted meat juice or beef-tea repeatedly, when they refuse all other kinds of food." This is particularly remarkable in "cases of gastric-fever, in which," he says, "little or nothing else besides beef-tea or diluted meat-juice" has been taken for weeks, or even months; "and yet a pint of beef-tea contains scarcely one-fourth ounce of anything but water." The result is so striking that he asks what is

its mode of action? "Not simply nutrient—one-fourth ounce of the most nutritive material cannot nearly replace the daily wear and tear of the tissues in any circumstances. Possibly," he says, "it belongs to a new denomination of remedies."

"It has been observed that a small quantity of beef-tea, added to other articles of nutrition, augments their power out of all proportion to the additional amount of solid matter.

"The reason why jelly should be innutritious, and beef-tea nutritious to the sick, is a secret yet undiscovered, but it clearly shows that careful observation of the sick is the only clue to the best dietary.

"Chemistry has, as yet, afforded little insight into the dieting of the sick; all that chemistry can tell us is the amount of carboniferous and nitrogenous elements discovered in different dietetic articles. It has given us lists of dietetic substances, arranged in the order of their richness in one or other of these principles; but that is all. In the great majority of cases the stomach of the patient is guided by other principles of selection than merely the amount of carbon or nitrogen in the diet. No doubt in this, as in other things, nature has very definite rules for her guidance, but these rules can only be ascertained by the most careful observation at the bedside. She there teaches us that living chemistry, the chemistry of reparation, is something different from the chemistry of the laboratory. Organic chemistry is useful, as all knowledge is, when we come face to face with nature; but it by no means follows that we should learn in the laboratory any one of the reparative processes going on in disease.

"Again, the nutritive power of milk and of the preparations from milk is very much undervalued; there is nearly as much nourishment in half a pint of milk as there is in a quarter of a pound of meat. But this is not the whole question or nearly the whole. The main question is, what the patient's stomach can assimilate or derive nourishment from, and of this the patient's stomach is the sole judge. The diet which will keep the healthy man healthy, will kill the sick one. The same beef, which is the most nutritive of all meat, and which nourishes the healthy man, is the least nourishing of all food to the sick man, whose half-dead stomach can assimilate no part of it, that is, make no food out of it. On a diet of beef-tea, healthy men on the other hand speedily lose their strength.

"I have known patients live for many months without touching bread, because they could not eat bakers' bread. Home-made bread or brown bread is a most important article of diet for many patients. The use of laxatives may be entirely superseded by it. Oat-cake is another."—*Scudder*.

You should never give tea or coffee to the sick, as a rule, after five o'clock in the afternoon. Sleeplessness in the early night is from excitement generally, and is increased by tea or coffee; sleep-

lessness which continues to the early morning, is from exhaustion often and is relieved by tea. In general, the dry and dirty tongue always prefers tea to coffee and will quite decline milk, unless with tea. Coffee is a better restorative than tea, but a greater impairer of the digestion.

In making coffee, it is absolutely necessary to buy it in the berry and grind it at home, or see it ground. Otherwise you may reckon upon its containing a certain amount of chicory, at least. This is not a question of the taste or of the wholesomeness of chicory; it is that chicory has nothing at all of the properties for which you give coffee; and therefore you may as well not give it.

DIVISION NINTH.

MAGNETISM.

THE SCIENCE APPLIED TO DISEASE.

Since the reality of the phenomena of magnetism is now conceded, even by those members of the medical profession who were formerly the most skeptical on this point, we think our book would be incomplete without a fair statement of its powers and methods, and therefore submit the following:

In the first place, and by way of a general introduction of the subject, we extract from the "Cincinnati Medical Advance," some parts of an address by W. L. Fleming, M. D., which was read before the Homœopathic Medical Society of the county of New York:

"The term animal magnetism has been applied to a subtle force existing in man, which, it was discovered during the last century, was capable of producing upon certain persons, especially somnambulists, effects similar to those produced by the magnet; hence the name, animal magnetism.

"I have myself treated many cases of an inflammatory character, including acute rheumatism, where ordinary manipulation was at first impossible, owing to extreme sensitiveness; but where, by holding the hands lightly over the inflamed part, the sensitiveness has been gradually diminished until full manipulatory action could be carried on with but little or no suffering, and I am happy to add, in nearly every such case so far as my memory serves me, the relief has been prompt and permanent. I have frequently dispersed boils, and in one case a large carbuncle situated in the popliteal space and which had progressed well toward suppuration, by holding the hands upon them and using very gentle manipulation. In one instance, where a patient had submitted to a surgical operation for the removal of a duplicate thumb and was suffering intense pain, I succeeded in entirely relieving the pain for six or eight hours, by slowly passing my hand *without contact* two or three times from the thumb toward the elbow; when at the end of this time the pain returned, I repeated the operation and the patient suffered no more during the healing process. Again, in the case of a phthisical (consumptive) patient who had long suffered from an obstinate constipation and had been in the habit of using enormous doses of purgatives to obtain even temporary relief, I simply administered once a day magnetized water; and in two or three days a natural and

easy movement of the bowels was obtained, a condition of things which the patient had not before experienced for several years. My method of magnetizing the water was as follows: I held the glass containing the water (as much as the patient desired to drink at one time) in the palm of the left hand, and placing my right hand over and a little above it, with the fingers converged and pointing down, maintained this position from three to five minutes, when the water was sufficiently charged to be administered.

"And still another instance I can give you from my own experience, clearly demonstrating the existence of some peculiar force capable of exerting a powerful influence upon the human body without the intervention of active manipulation.

"A gentleman who was visiting at my house, and who had himself experimented considerably with the animal magnetic force, at my request permitted me to try an experiment upon him, which I will here relate. Desiring to ascertain to what extent the nerves could be affected by this force alone and if it were possible by this means to produce local anæsthesia, I placed him in as easy a position as possible in one chair, with his leg upon another directly in front, and in such a position that there would be no under pressure at any one point. I then made a few passes over the boot and clothing, without touching, from the foot toward the body, and then with my hands encircling as nearly as possible the limb above the knee but without contact, I concentrated my will upon this point with the intent to cut off if possible the nerve supply from below this point. After holding the hands thus for a few minutes, he complained of a prickling sensation which continued for a short time and then ceased. I continued holding the hands in the same position for about fifteen minutes at the end of which time, the leg was completely anæsthetized. There was neither feeling nor motion in it; and it remained in this condition until I made a few passes downward, when the tingling process was gone through with again and the leg was gradually restored to its normal condition.

"Is there nothing in all this, then, to prove the action of some force independent of mechanical effect? It certainly seems so to me and I could give many more instances within my own experience all tending to demonstrate this fact, and enough evidence of this kind could be obtained from others, if needed, to fill a volume. But the strongest and clearest evidence in support of the existence of animal magnetism and that the phenomena resulting from its application are due to a fluid or imponderable power (or influence), is to be found in the researches of Baron von Reichenbach on Magnetism, etc. The testimony of this author upon this point, from his name and standing as a scientist, cannot fail to carry with it great weight. He says:

"And now our investigation has brought us to the portal of what is called animal magnetism. This *noli me tangere* we shall now be able to seize. When I made a few passes down (with a

magnet, the person of Mlle. Sturman from head to foot, she became insensible and was attacked by spasms, generally rigid. When I performed many passes with my large rock crystal, the result was the same. But I could also produce the same effect by using, instead of the magnet or the crystal, my hands alone. The peculiar force (we shall call it crystalline) found both in magnets and crystals must therefore also reside in my hands.

“In order to test this more fully I tried the experiments which I shall presently describe. If this were the case, the force residing in my hand must produce all those effects which the crystalline force is capable of producing, as described in the preceding treatise; I could conclude as to difference of similarity, according to the degree of resemblance in the properties observed. It was first of all necessary to ascertain whether there existed a coincidence and to what extent, between the action of the crystals on the healthy or diseased sensitive nerve and that of the human hand on the same re-agent. When in the case of persons sufficiently sensitive to perceive distinctly the passes made with a large crystal along the inner surface of the hand, I drew along the left hands of the patients the points of the fingers of my right hand, turned laterally, so that one finger followed the other and all passed over the same line, which was drawn from the wrist down to beyond the point of the middle finger, there was not one among them who did not perceive the effect exactly as from the point of a crystal. It was generally described as a cool aura, more rarely as a tepid aura; and was not only as powerful but usually considerably more powerful than a crystal.

“I need not here speak of the diseased subjects, since all of those I have hitherto mentioned perceived the effect with the same singular distinctness with which they felt as a general rule every magnetic pass; and Mlles. Maix and Nowotney were even able to distinguish the effect of each finger separately. But there were but few healthy persons who were quite sufficiently sensitive for this re-action. Indeed, some of these who only felt indistinctly the action of the crystals perceived that of the fingers, used as above described, so plainly that they could always point it out while the eyes were averted. I am permitted here to refer to my friend, M. Carl Shuh, who is a strong healthy man and perceives the action of crystals with unusual distinctness. When, to make assurance doubly sure and contrary to my own rule, I blindfolded him and made slow passes with the fingers of my right hand, as before described, over his left hand, he experienced so strong and distinct a sensation, analogous to that produced by a crystal, that he could distinguish each individual pass and was able, for example, at all times exactly to tell when I had made exactly two-thirds of the whole pass. M. Studer, already mentioned, also perceived this quite as plainly, as well as numerous other persons, among whom I have permission to name one of the finest, most powerful, and

hardest men I have ever seen, who has traveled through Persia and Kurdistan, and twice penetrated from Egypt into the heart of Africa; who is therefore a rare example of iron health and strength of constitution, namely, M. Kotschy, who accompanied M. Russeger in part of his travels. He perceives the effect most distinctly when the temperature of the air is agreeable, and less distinctly when it is cold. The fingers, therefore, act, as on the sensitive nerve, exactly in the same way as a crystal of middling size.

"I compared the two forces with reference to their conductivity. I caused Mlle. Sturman to take hold of one end of a rod of German silver with her right hand, taking care previously to avoid touching it myself. I allowed her some time to become accustomed to the sensation caused by the rod taken alone. I now placed on the other end the points of the fingers of my right hand, which were rather moist. She instantly perceived a warm sensation and this passed upward as far as the elbow. I now added the fingers of my left hand; the sensation became much stronger and reached to the shoulder. I removed my fingers; the sensation rapidly diminished, without however instantly disappearing. I next attached and removed my fingers alternately; the sensation kept pace with the changes, increasing and diminishing regularly. I repeated these experiments, substituting for the rod of German silver an iron wire about five feet in length. When one end was held by the patient and I applied five fingers to the other, the patient perceived a current of decided heat; and with my ten fingers the sensation was stronger. It always quickly disappeared when I dropped the wire out of my hand. This fact was confirmed by frequent repetitions.

"I now wished to try whether bodies could be charged with the force from the hand. I began with Mlle. Sturman. I laid the German silver rod near her and allowed it to lie for a quarter of an hour. I then begged her to take it in her hand and thus to become accustomed to the sensation it might cause. After doing so she laid it down and then I took it in my hand for some seconds and laid it down. When she took hold of it she felt warm and so strangely charged that the well-known sensation caused under similar circumstances by crystals, rose through the hand as far as the elbow. This was of course repeated with many variations, for the sake of control. Her physician, Dr. Lippich, made a similar experiment. At my request, in another room he took into his hands for a short time one of two precisely similar porcelain saucers, not touching the other. They were now presented to the patient, who with the greatest facility and accuracy distinguished that which had been held in the hand from the other. After about ten minutes the effect was dissipated and both saucers felt alike. The experiment with the rod was soon after repeated with Mlle. Maix in the same way as above. It yielded the same results; the rod was charged by my fingers and the charge which Mlle. Sturman had felt for five minutes was perceived by the more sensitive Mlle. Maix to the last, gradually

diminishing for twenty minutes. In both patients the sensation was the same; one of warmth, rising into the arm and coinciding exactly with that caused under similar circumstances by the rock crystal. I observed the same phenomena some months later in Mlles. Reichel and Atzmanusdorfer. The most surprising result is that attained with a glass of water. If it be taken in one hand and grasped below by the fingers, and if this be continued for about ten minutes, it then possesses for sensitive patients the smell, the taste and all the well-marked and curious properties of what is called magnetized water. Those who have never examined the matter experimentally may exclaim irrationally against this. I was formerly myself one of this number, but all those who have tested this fact by experiment and witnessed the effects, as I have done, can only speak of it with astonishment. The water thus charged, which is exactly similar to that treated by magnets or crystals, has therefore received from the fingers an abundant charge of the peculiar force residing in them and retains it for a considerable time. I could after a time produce similar effects on all possible substances by holding them for some time in my hand. The patients who had tried them all before I touched them, now perceived in all of them the same change as if they had been stroked with the poles of magnets or crystals, and this whether they knew of my having touched the objects or had been kept in ignorance of my having done so. It follows plainly from all this that bodies may be charged with the force residing in the hands exactly as with the crystalline force.'

"Here, then, we have the most conclusive evidence of the existence in man of the peculiar force called animal magnetism, and also that it is *conductible* and can be *imparted* to all substances. This testimony is all the more valuable, as the facts here stated can be verified at any time by all who may choose to investigate the subject.

"As a therapeutic means, this force has every reason to recommend it to the physician. While it in no way interferes with the action of a drug, it is efficient where drugs most conspicuously fail; and as an auxiliary to surgical and medical treatment, it will, when better understood, fill a need that has long been felt. For instance, in those cases where surgical interference is necessary and yet where the condition of the patient is such as to render an operation unsafe, there is no other means that will so quickly impart vitality and that will tend so much to insure a successful result as this. And in those adynamic diseases, where the enfeebled system fails to respond to drug action, this force will prove most valuable.

"While the animal magnetic force has proved most efficacious in both acute and chronic diseases, it is in the cure of the latter that it has achieved its greatest success; especially in the treatment of this class of maladies, it is destined to form an important part of the therapeutics of the future; and in those diseases which have

proved the least amenable to ordinary methods of cure, it will be our chief reliance.

"In the treatment of that fearful and mysterious disease, insanity, I believe that this force is yet to play an important part. Although my experience in this direction has been limited and I can not speak with that degree of confidence regarding its efficiency in this as in other ills to which flesh is heir, yet the result so far attained seems to warrant its thorough trial in this disease. Of the few cases of mental disorder which I have had occasion to treat, during eight years' employment of this means, one only afforded me the opportunity to continue the treatment a sufficient length of time to be considered a fair test of its merits. In this, a case of melancholia—reported in a former paper—of several years' standing, in which other means had failed, the treatment was applied less than two months and resulted in complete recovery.

"In those diseases occurring in scrofulous children, which generally result in deformity, animal magnetism is pre-eminently qualified to take the lead of all other modes of treatment; and I think I may truthfully assert that, in the majority of cases of this kind, deformity may be entirely prevented if this treatment be applied in time.

"In order to demonstrate the action of this force, in this class of troubles, I will here briefly cite a case.

"Charlie B., aged five years; suffering from Potts' disease of the spine and white swelling of the knee. Various methods of treatment had been unavailingly employed in his case and he was rapidly growing worse. When brought to me for treatment he was fast losing flesh, had no appetite, was peevish and irritable. Examination revealed some curvature in the lumbar region, and spinal abscess. The right knee was considerably enlarged and very sensitive. The leg was flexed so that the toes scarcely touched the floor when standing, and motion exceedingly painful.

"After a few treatments there was marked improvement in the appetite and he soon began to show evidence of returning bodily health. The improvement rapidly continued, and although he wore no brace or support for the spine the destructive process was arrested, the abscess gradually healed and in a short time the spinal trouble was entirely cured. It is now nearly five years since I treated this case and the friends of the patient (who live out of town) inform me that there is no trouble or deformity of the spine so far as they can perceive. As the treatment was discontinued at the end of nine weeks, the knee, though much improved, has not been cured, as I believe it would have been, had the treatment been persisted in.

"I could cite many cases showing the value of this force in various diseases, but the limits of this paper will not permit. I will merely state that by this means I have cured quite a number of cases of paralysis, nervous affections and numerous other forms of

disease coming under the head of chronic, many of these patients having first tried the ordinary method of cure without success.

"The results attained by this force in those diseases incident to women, *especially* entitle it to the consideration of the profession as an auxiliary treatment in such cases.

"To conclude: Animal magnetism is a *scientific fact*. If it be not a fact, 'then do no facts exist in any department of science.' That it has proved itself a most powerful therapeutic means, is also a fact. Such being the case, the duty of the medical profession in regard to this matter is perfectly plain."

How to Magnetize—Select a good subject.

1. One mark of such a person is very fine, soft hair; another is fair complexion, with light, full and expressive eyes and regular and handsome features. Debility of health, also, predisposes to magnetic susceptibility.

2. Choose a person younger and physically weaker than yourself and by all means of an opposite or different temperament.

3. Select a kind, well disposed and intelligent person.

4. Sit beside or before your subject, preserving an easy and tranquil frame of mind.

5. Be sure that he submits himself passively to your influence and thinks of nothing foreign to the purpose and occasion. He may either close his eyes or fix them steadily upon yours.

6. Hold his hands crossed, his left with your left and his right with your right, the balls of your thumbs touching the balls of his.

7. Have perfect confidence in your ability to put him to sleep in a short time.

8. Use your will, earnestly but calmly, to effect this object, fixing your eyes upon a point midway between his. If convenient, sit so that his extended arms may rest upon your knees.

9. Hold his thumbs until you feel that the heat in both pairs of hands is equal. This will occur within ten minutes.

10. Begin the magnetic process by holding your hands upon his head, lightly, so that the palms shall touch the temples and the tips of the fingers rest upon the top of his head; or place your palms on his eyes and let the fingers rest upon the forehead. Incline your forehead towards his; and to avoid fatigue rest your elbows on your knees.

11. Continue thus to charge his head until his eyelids close involuntarily and firmly. However difficult a subject, if you persevere and he does not resist, he must at last succumb. It may take five minutes or half an hour, or as many sittings of the same length of time. It is useless to proceed until you do close his eyelids and there is no better or speedier method than this.

12. When you have succeeded in closing his eyelids so that he cannot open them without your permission, point your extended fingers, for a short time, in succession at his eyes, forehead, and the

top, sides and back of his head, and then to his face, chest and stomach. This, if properly done, will well accomplish the charging processes.

13. Now begin to draw off the magnetic essence with which you have overcharged him, in this way: Move your hands, slowly and gently, down from his head to his fingers along the inside of his arms, beginning both at the top and back of his head, and from the forehead over the face, to the stomach and knees.

14. If sleep be not induced or the eyes re-open after closing, close the sitting in half an hour. Repeated trials will infallibly bring your subject into the magnetic state, which will somewhat resemble natural sleep at first. He will improve in susceptibility in proportion to the regularity of the magnetic process.

15. It will be well, for a few of the first occasions, to let him sleep on quietly for a while and to continue the drawing process for some time after he falls asleep.

16. Finally, when you deem him prepared for this, speak to him and ask how he feels. This will arouse and wake him, or he will sleep on without speaking, or he will answer. If he answers, he has entered into the somnambule state. Then ask him if your method agrees with him and if he can suggest any improvement on it; whether anything occurs to him to say or advise; whether he sees light in his brain and how much; if he can perceive his magnetizer; where his organ of vision is located and how you can improve it; whether he can look into your system or his own and what he can say of either, how far he can see; if he can travel or foresee anything that can take place; whether he can look into your mind, so as to perceive a word you think of, or if not, how soon he will be able to do so, etc., etc.

17. Let him sleep as long as he will, but wake him if he seem fatigued or express a desire to be awakened, first requesting him not to remember what has taken place during his sleep.

18. Wake him by standing behind his chair and passing your hand upwards, from his knees and arms to his head and by bringing up your fingers briskly before his face, and telling him to awake. Give him his own time to awake and do not hurry or arouse him suddenly.

19. Upward passes not being magnetic, you should, therefore, in bringing them up, close your fingers and bend them into a semi-circle. The gentlest movements are the best. Let your fingers be apart during the imparting process, and remember that the tips and not the balls convey the fluid. Magnetize, if possible, at the same hour each day.

20. In case the action produces pain in any part, concentrate it to that part in order to draw it away afterwards. If the pain be in the head, attract it to the knees.

21. Occasionally magnetize your subject standing.

Magnetism as a Medical Agent—It is not pretended that magnetism cures all diseases; some are no doubt beyond its reach, but it is certainly a valuable auxiliary of medicine and every physician should welcome it to his field of labor and make himself familiar with its principles and practice, because a general knowledge of them would, as has been proved by thousands of experiments, relieve many of the ills of life and keep multitudes from untimely graves. Says Baron Dupotet, "The value of such a discovery as animal magnetism is to be estimated, not by the evils by which its unskillful administration may give rise, but by the positive good which may be derived from it. Already we have seen that during the state of magnetic insensibility the most painful surgical operations may be performed and the patient remain the whole time in a state of unconsciousness. Is this not a boon to suffering humanity? This is not all; the most obstinate and painful chronic diseases have been relieved and perfectly cured by its application. It was the successful treatment and cure of diseases which had notoriously resisted every other remedy that compelled the sturdiest and most inveterate of our antagonists to recognize the influence of magnetism, and when these facts were demonstrated beyond all reasonable controversy it remained for them to seek in the shadows of their imagination the solution of the mystery. In epilepsy, hysteria, neuralgia, chronic rheumatism, headache, I know of no remedy so immediate and availing. How often have I seen the victim of pain writhing in the most acute agony, sink under its influence into a state of most placid composure."

We submit the following directions for its application:

For headache, place your hand upon the part affected and exercise a constant and benevolent desire to relieve pain, and after holding it there a few minutes pass it lightly over the head from right to left. If the pain is occasioned by the stomach, next place your hand on it and proceed as with the head. If the headache is accompanied with cold feet, after holding the hands on the head for a short time, draw them slowly from the head downwards, along the sides to the knees; soon the head will be relieved and the feet become warm. If the pain has existed for years, it is chronic and must have a prolonged treatment.

In rheumatism, if local, place your hand where pain is felt, hold it there for fifteen or twenty minutes, then pass it lightly to the extremity of the feet and thus continue for ten minutes, but if the limbs generally are affected make passes a short distance from them to their extremities for an hour or more; if the disease is chronic repeat the operation daily until the relief is complete, and so with every chronic disease.

The magnetic sleep is highly restorative and should always be resorted to when the complaint is general; but when there is simply a local pain or disease, there is no necessity for it.

For toothache, hold the hand to the part affected for a few

minutes, then pass the ends of the fingers lightly over the cheek, from right to left.

In boils, magnetize when the inflammation begins.

For a felon, make passes along the arm as far as the extremity of the finger, and after lingering a moment there draw off quickly from the end.

The action of magnetism is upon the whole system. It assists the efforts which nature is constantly making to banish from the system whatever is injurious or unwholesome. Its re-establishment of a sound and healthy equilibrium is especially soothing, and when there is a deficiency of vital essence in any of the organs it strengthens by imparting that essence. It quiets the nerves, restores sleep and appetite, relieves pain, abates swellings and imparts cheerfulness and tranquility even in the case of those organic and hereditary diseases which it cannot cure.

In magnetizing for diseases, we summarize the following directions:

1. In all local affections, accumulate and concentrate the current upon the part and afterwards draw it off towards the extremities. The pain may be increased at first, but it will finally be soothed away by drawing off.

2. The fingers gathered to a point concentrate the action upon the part to which they are directed.

3. For all chronic and acute diseases and surgical operations, except in the case of rheumatism, bruises and burns and similar local affections, magnetize the whole system in the regular way and induce sleep. The magnetic lethargy will prove highly restorative and refreshing.

DIVISION TENTH.

WATER CURE—HYDROPATHY.

By J. D. CRAIG, M. D., GRADUATE OF NEW YORK HYGIEO-THERAPEUTIC COLLEGE.

Dr. Shew, who was one of the earliest writers on Hydropathy, or the water-cure, like all adherents of a new faith exhibited his zeal by the statement that the "system which has for its medicals water, air, exercise, and diet, is the greatest of all medical improvements, which is destined not only to make the members of communities their own physicians for the most part, but to mitigate, in an unprecedented manner, the extent, the pains and the perils of disease."

If this prophecy has been realized only in part, and that in a more limited degree than is deserved, the reason is to be found in the exaggerated expectations and statements of the early adherents of hydropathy, by which the therapeutic range of hygienic measures was overestimated, and other remedial agencies depreciated, together with the too frequent misapplication of the hydropathic appliances through inexperience and consequent ignorance of their power for harm on the part of the laity, and often, it must be confessed, by the practitioners who were supposed to be skilled in their use.

Naturally all this produced a reaction, but nevertheless the influence of Priessnitz's systems has had a very important part in the reformation in medicine that has taken place in the last thirty or forty years. The study of hygiene received an impetus through the "water-cure system" in the days of its organized aggressiveness that laid the foundation for the system of prevention of disease that prevails to so great an extent in all schools of medicine at the present day.

The use of cold water in the treatment of disease is now very generally discountenanced in this country, for the reason that experience has shown that persons of nervous organizations, such as prevail in America, have not the reactive power of those whose muscular systems predominate.

To most patients a tepid, warm, or even hot bath is found to be much more effective as well as pleasanter, and accordingly the cold douches, packs, showers and plunges of thirty years ago have

given place to the Turkish, Russian and Moliere baths of to-day. In private practice too, even compresses are more frequently applied hot than formerly, and the drinking of cold water has given place to water as hot as can be swallowed.

This change will be apparent by comparing the early works on hydropathy with the treatment recommended in the following pages, which is the result of nearly thirty years experience of myself and others.

To the non-professional reader a word of caution will not be out of place. It is an error to suppose that when hygienic agencies alone are employed in the treatment of disease they are therefore entirely harmless. Not many poisons are capable of producing more serious disturbances than some of the applications of water when used improperly, and this holds true, to a greater or less degree, of all the other appliances of the hydropathic system. In the use of the minor measures such as the foot-bath and compresses to local parts, a wide latitude may be given, but the heroic measures, such as the wet-sheet pack, general douche, plunge and shower baths, must be used with great care.

The fundamental point to keep in view in treatment is to equalize the circulation. Cold parts should be warmed and increased temperature in other parts reduced, and this reduction of temperature is not necessarily to be accomplished by the application of cold, for this is not always the most effective way of accomplishing the object in view. Increased heat is always accompanied with a corresponding increase of circulation and consequent congestion, and although the distention of the bloodvessels and capillaries are primarily caused by disturbances in the nerve centers, the very fact of distention when continued for a time produces temporary paralysis of the muscular and other contractile tissues, such as takes place in the bladder when the urine is retained too long, and the local application of a wet compress, even when warm, if undisturbed for a time restores the tone of the vessels by removing some of the more solid constituents of the blood, by the well known law of endosmosis and exosmosis, and thus an important aid is given to the vital forces in their efforts to restore healthy action.

The armamentarium or *materia medica* of hydropathy consists of all hygienic agencies; but it is obvious that the subjects cover too wide a field to treat in a work of this kind, so that I shall be obliged to confine myself to the use of water, with here and there an allusion to the others as the case may demand, and before taking up the treatment of the various diseases, the following description of the hydropathic measures should be carefully studied.

Few, if any physicians of the present day confine their treatment to the hydropathic appliances alone, but use medicines to a greater or lesser degree. For reasons that need not be discussed here, and although I prefer the use of the properly selected medicines in connection with the hygienic measures, I decidedly recommend the

hydropathic appliances alone, for home treatment, for the reason that medicines should be administered by those only who have had a thorough medical education, whilst water, air, exercise and diet can be used by any one who is possessed of good fair common sense.

Any treatise on the use of water would be incomplete without general directions for bathing, and I cannot do better than to copy the notice issued by the Royal Humane Society, for the reason that the rules laid down by this body are entirely correct, and the weight of their authority will serve to more fully impress them on the reader's mind.

IMPROPER BATHING AND LACK OF BATHING CAUSES DISEASE AND THE DEATH OF THOUSANDS.

Millions suffer because of ignorance of the proper method of bathing. Never bathe within two hours of eating, when exhausted, or when cooling after perspiration. Never bathe in the open air if chilliness follows the plunge, but bathe when the body is warm, provided no time is lost in getting into the water. Avoid chilling the body by sitting or standing undressed on the banks or in boats after having been in the water; leave the water at once if there is the slightest feeling of chilliness. The vigorous and strong may bathe early in the morning on an empty stomach. The young and those who are weak had better bathe two or three hours after a meal; the best time for such is from two to three hours after breakfast. Those who are subject to attacks of giddiness or faintness, and those who suffer from palpitation and other sense of discomfort at the heart, should not bathe without first consulting their medical adviser."

THE WET-SHEET PACK.

In this process we use a coarse linen sheet—although a coarse cotton one answers tolerably well—of length sufficient to reach from the patient's head to the soles of his feet, and about two yards in width. The bed is stripped of all its covering, one or two pillows only being left for the patient's head. One or two comforts are then spread upon it, and over these a like number of woollen blankets, which are not so much injured by the wet as cotton comforts. Or, what is better, but more expensive, we may use blankets only, two or more pairs as they may be needed. The sheet having been pretty well wrung out of warm or tepid water—pure and soft always if such can be had—is then spread out as smoothly as may be upon the upper blanket. The patient being undressed, at full length upon the sheet, and holding up his arms, an assistant laps one side of it over the body and lower limbs, tucking it snugly the whole length of the body; the arms are then dropped at the side, after which the other part of the sheet is lapped over as before, except that the

upper edge is first brought down on the chest so as to be tight and smooth over the shoulder and neck; a turn is then made so as to bring the remaining part over the other shoulder where it is tucked in snugly, as well as down the whole length of the body as before. The blankets are then, one by one, brought over the person in the same way, and tucked under from "head to foot," and then comforts in the same manner, if such are used. After the first blanket is wrapped over the patient, it and the enclosed sheet are to be brought up and laid beside one of the legs, where they are to be covered over with the other wraps; this is to prevent the feet from becoming cold by having them also wrapped snug and tight. It is best always to place a wet towel covered with a dry one on the patient's head while he is packed, or if it does not chill too much, the dry towel may be left off. This is the ordinary way of taking a "pack" in *chronic* disease.

THE WET DRESS.

A modification of the wet sheet, and in some respects an improvement, is to have a coarse linen or cotton dress made with large arms, so that one may take the application without help. The dress once applied, the patient lays himself upon blankets, in which he wraps himself just sufficiently to become comfortable. Or he may have flannel dresses to put on over the wet, and then lie in a common bed. In this application the air is not excluded from the surface to anything like the same extent as in the common tight pack. Hence, a patient may remain in it half or the whole of the night if he choose, being careful to become neither too warm nor too cold. Re-wetting it once or twice in the night will be of service. Often in a single night a bad cold may be thrown off in this simple way.

THE HALF-PACK.

Patients not infrequently present themselves in whom the reactive energy is so low that a "half-pack," as it is called, will be tolerated, while the entire sheet would abstract too much caloric from the body. In such cases the sheet is applied so as to extend only from the armpits, or at most, from the neck to the hips, leaving the lower extremities, as it were, in the dry pack. Sometimes, also, the sheet is allowed to extend to the ankles, not including the feet. Packing the trunk of the body in wet towels acts upon the same principle as the partial or half pack, and is in many cases a valuable preliminary measure. These precautions it is well to observe where a feeble patient, who has suffered long from chronic disease, is beginning with the envelopment.

THE FOLDED WET SHEET.

As a modification of the wet-sheet principle, I have often used in domestic practice the following application: A common sheet

of coarse quality is folded four double, which leaves it large enough to encircle the trunk of the body from the armpits down. Two thicknesses of the sheet, to come next to the body, are wet in cold water, or the whole of the sheet, according to the case. In a host of painful ailments, such as pleurisy, inflammation of the lungs, inflammation of the bowels, colic, cholera, cholera-morbus, rheumatism, painful menstruation, after-pains, etc., etc., this is the most valuable application. Often this remedy, which can be applied in a minute, as it were, will soothe a patient quickly to sleep, while without it a night of agony would be his lot. One advantage, too, of this appliance is, that if a patient is too weak to rise, the sheet may be opened in front so that fresh water may, when needed, be sprinkled upon it and wet towels may be added under it, upon the abdomen if necessary.

THE DOUCHE-BATH.

This is the most powerful, but not the most useful, of all hydropathic appliances. A common douche consists of a stream of water from one to two inches in diameter, with a fall of ten, fifteen or twenty feet. But douches may be arranged of any desirable size and height.

This remedy is useful in paralysis, stiff joints, gout, rheumatism, tumors and old swellings of various kinds. Those who have weak lungs, stomach or other abdominal organs, should not resort to the douche without the best of medical advice.

SHOWER-BATH.

This is also one of the more powerful of the hydropathic appliances, and needs judgment in its use. It consists, in fact, of a vast number of small streams or douches, and hence is a powerful refrigerant as well as excitant to the system. It should never be taken upon the head, especially if the water has any considerable force, or fall from any considerable height, for the reason that the head should never be subjected to mechanical force. It is useful in some cases to commence this bath only upon the limbs for a time at first.

CATARACT-BATH.

This is also one of the more powerful of the hydropathic processes, and is to be classed with the two preceding baths. Like those, it may be said to be stimulant, tonic and alterative, while it is also highly sedative so far as animal heat is concerned.

HOSE-BATH.

Through the modern improvements in India-rubber, gutta percha, leather, etc., it is easy, wherever there is a small fall or

head of water, to arrange what is called a hose-bath. It is in principle a douche, with the additional advantage that it can be made to act upon any part of the body, and from whatever direction we choose. Rightly applied, the hose is a valuable means.

PAIL-DOUCHE.

The patient seats himself in an empty, shallow, or other bathing tub, and crosses his hands over his chest. As many pails of water as are ordered are then dashed over him suddenly, one after the other, and one before and one behind—not poured, but thrown with some force, by first a backward and then a forward motion of the pail; half the number of pails being then emptied on the back of his folded hands, and half between the shoulders behind. This bath varies in effect according to the temperature of the water and the amount used. If a number of pails are used and the water is cold, it in effect very nearly resembles the common plunge.

THE WAVE, OR SLUICE-BATH.

What is generally called in Germany a wave, but more properly a *sluice*-bath, is taken at the sluice-way of an under-shot mill-wheel, or in a similar place. The patient takes hold of a rope or something by which he can maintain his position, and then, lying down, subjects his body to the action of the water. This is, on the whole, a pleasant and agreeable bath, and in its effects somewhat resembles the douche, being, however, milder and safer. The sluice-bath can hardly be said to possess any peculiar advantages. It was not used by Priessnitz, although he did not object to it.

HALF-BATH.

This bath may be used as one of the mildest of water-cure processes, or as one of the most powerful. An ordinary bathing tub is a very good apparatus for the purpose. A good-sized washing tub will answer very well, if there is nothing else at hand. The water is generally quite shallow in this bath—from three to six inches. Priessnitz's half-baths were made of wood, four or five feet long, about two and a half feet wide and twenty inches deep. This simple contrivance is one of his most powerful means—that by which some of his highest triumphs were achieved. The water is generally used of moderate temperature, at sixty to seventy degrees Fahr., or higher. This bath may be used—1st. As a means of cooling the mass of the circulation in the hot stages of fever and inflammatory attacks of every kind. 2d. As a revulsive, or means of reducing congestion or inflammation of the nobler organs, the brain, lungs, stomach, liver, etc. 3d. As a means of resuscitation in the shock of serious accidents, sun-stroke, and before, during or after apoplectic and other fits. In drunkenness and delirium-tremens

the cold half-bath is a sovereign remedy. 4th. As a milder means and preparatory to the general bath in weak constitutions. In the latter of these indications, the bath is generally used but for a few minutes after the wet sheet, or at other times, as may be desired; in the former, much practical knowledge is necessary in order to proceed always with safety and to obtain the best results. Thus six, or even nine hours may be required, with the greatest perseverance, the patient being thoroughly rubbed over the whole surface, and this to be kept up constantly by relays of assistants, the patient's head and shoulders being supported meanwhile.

HEAD-BATH.

From time immemorial, cooling applications to the head have been much depended upon in that violent and dangerous disease, inflammation of the brain. All other known means failing, certain obstinate affections of the head have been known to give way to the affusion of cold water upon the part. In headache, drunkenness, delirium-tremens, the delirium of fever, epilepsy, rheumatism of the head, diseases of the eye, earache, deafness, loss of smell and taste and in nose-bleed this highly energetic remedy is brought to bear.

PLUNGE-BATH.

In sea, river and lake, as well as by artificial means, and as a matter of luxury, religious observance, purification, and the prevention and cure of disease, the plunge-bath has, in all periods of time, and in all parts of the world, been a favorite resort. So efficacious, indeed, has this simple means proved in healing the sick, that not a little superstition has been mingled with it. Springs and wells have often been supposed to possess some mysterious power and for that reason been named after some patron saint. In this respect the world has loved mystery and marvelousness rather than the pure and simple truth.

SITTING-BATH.

Convenient tubs, wooden or metallic, are constructed for this bath but an ordinary wash tub answers very well. The article should be large enough to admit the motion of the arms in rubbing the abdomen, sides and hips, first with one hand and then the other. Water enough is used generally to come pretty well up the abdomen. The more movement and friction while in this bath the better. It is more convenient if the tub be elevated two or three inches from the floor. Some undress completely and place a blanket or sheet over the upper part of the body, but oftener the parts only of the person to be exposed to the water are uncovered. In a variety of ailments this bath is highly valuable. It may be made one of the most powerful of all the hydropathic modes. Like all

other powerful applications, it should be taken only after digestion is nearly or quite gone through with. As a tonic to the stomach, liver, bowels, womb, spine, etc., this bath is highly useful. In constipation and other irregularities it is famous. Those of sedentary habits will find its use of rare service. For the tonic effect it is taken ten to twenty or twenty-five minutes or more. If it is continued some length of time, the water is to be changed once or more, as it would otherwise become too warm.

WASHTUB-BATH.

Under a great variety of circumstances what may be called the "washtub-bath" is an invaluable resort. For example, a patient is feverish; by seating him in a washtub half filled with water and at the same time, if we choose, having his feet in a pail of water, cold or warm, according to the case, we can give him any desirable amount of cooling. We cannot indeed too highly prize this simple contrivance for using water—a means which every family possesses.

THE AFFUSION.

The patient stands in a wash-tub, bathing-tub, or other convenient place, when by means of a pail, pitcher or basin, the assistant pours water upon the head, neck, etc., either upon the whole of the body or only upon a part. The water is used in quantity and temperature according to the necessities of the case. The affusion is one of the best of hydropathic modes. Fifty years ago, Dr. Currie, of England, performed great cures in fever by the affusion, sometimes tepid, at others cold, according to the strength and heat of the patient. If there was great heat the water was used cold; if not, the reverse. In a variety of febrile diseases, such as typhus-fever, scarlet-fever, small-pox, measles, tetanus, convulsions, etc., he used this remedy with remarkable success.

TOWEL AND SPONGE-BATH.

With one or two coarse towels and a quart or two of water we may take a very good bath almost anywhere, even in a carpeted room, at a hotel, or wherever we may be, without spilling a drop of the water. After a person becomes accustomed to this form of ablution, none but the most indolent will be willing to do without it, unless they can have some other form of bath. A daily towel ablution, thoroughly performed, is an excellent prevention against colds, helps the appetite and digestion and is a good means of preventing constipation. Some are in the habit of sitting in a half-bath, or a sitz-tub, and with a large sponge making the water pass freely upon the head, neck, shoulders, and other parts of the body. At the same time the bather may pour water from a cup, basin or pitcher, upon

the head, neck, etc. This is a mild affusion, and stronger in effect than the towel-bath.

WASH-DOWN.

The patient stands in an empty sitting or wash-tub, beside which stands a pail of tepid or warm water with two coarse towels soaking in it. The bath-attendant, taking his place behind the patient, lifts one of the towels, all loaded with water, and lays it quickly on the patient's head. The patient immediately seizes it, removes it from his head, and rubs himself rapidly with it—his face, his throat, shoulders, arms, chest, stomach, bowels, thighs, and legs. Having gone rapidly over the whole body once, he drops his towel into the pail again, which the bath-man presses down to the bottom of the water, then lifts out and places it on his head again. As before, the patient seizes it and goes over the same ground once more, and then drops it into the water again, when the bath-man again lifts it and places it on the head to be a third time removed by the patient and applied as before, rapidly, actively and energetically, all over his body in front. The bath-man is industriously occupied all the time behind in the same manner, from the back of the neck to the back of the legs, wetting his own towel as often as he wets that used by the patient, viz., three times. This is called a wash-down of three towels. The patient is then dried in a dry sheet. It is a more powerful bath than the common towel-bath, but not in all respects so convenient to take.

THE COLD FOOT-BATH.

One of the first things people who are troubled with cold feet do, is to plunge them into cold water. Nor is the assertion put forth in some of the hydropathic works, that the cold foot-bath was prescribed by Priessnitz for the same purpose that the faculty ordered warm ones, correct. When the feet are already cold, neither Priessnitz nor any one in his sober reason would prescribe cold water, which can only make the parts colder. To obtain the good effect of the cold foot-bath, so far as the feet are concerned, they should be warm whenever it is taken. For a tendency to coldness of the feet—a very common symptom in these days of so-called luxury and refinement, and one that indicates a state of things in the system incomparably more to be dreaded than the mere coldness of the feet, this is the remedy. It may be taken at any convenient time; just before the morning walk is a very suitable occasion, the parts being usually warm early in the day. At other times if cold, they should, if at all practicable, be warmed by exercise and friction, before subjecting them to the action of cold water. But in cases of old age, great debility, etc., the hot foot-bath and other warm applications may be resorted to before the cold. Thus with cold, exercise and friction, accustoming the feet daily and frequently to

cold water, will beget in them a habit of remaining warm. In a great variety of ailments, such as toothache, rush of blood to the head, headache, earache, inflammation of the eyes, gout, rheumatism, hemorrhages, etc., the cold foot-bath is a valuable remedy. It is ordered deep or shallow, and of duration according to the nature of the case.

WADING FOOT-BATHS.

I have often directed patients to wade in water in some convenient place, as a means of hardening the system and of giving tone to the nerves. Delicate ladies who were not able, as they supposed, to endure cold water applied to the feet, have by degrees, wetting the feet but little at first, become so accustomed to the coldest water that in a few weeks they could bear as much as any one would desire. Caution and perseverance should be the rule. It is partly by sympathy and partly by the abstraction of heat, that foot-baths and wetting the feet act in so beneficial or deleterious a manner as we know them to do. The principle of sympathy is an old one in the medical art, but none the worse for that.

THE WARM FOOT-BATH.

This one of the "old woman's" remedies and one of the best of its class. Many a "cold" that threatened serious consequences has been broken up by its use. To be effective, however, it should be taken at the very commencement of a cold, or other ailment, and as hot as can be borne, for twenty or thirty minutes, or longer. As the feet become accustomed to the high temperature, hot water should be added every few minutes, and at the termination of the bath the feet should be dipped for a few moments in water at about 60 or 70 degrees Fahrenheit.

THE NOSE-BATH.

In a variety of nasal ailments, catarrh, colds in the head, inflammation and ulceration of the nasal passages, nose-bleed, etc., the nose-bath is a salutary remedy. The water is used either tepid or cold, according to the case. It should be drawn back if possible, so that it is ejected by the mouth. Those who have injured the nasal cavities by much snuff-taking, will find advantage from sniffing water freely into the nostrils. If one is determined to leave off snuff, as every one addicted to it ought to be, if he regards either health or bodily comfort, he will find it useful often to take cold water, instead of the abominable weed.

THE EYE AND EAR-BATH.

Various contrivances may be brought to bear in applying water to the eye and ear. Light ascending douches and showers are use-

ful in various diseases of the parts. There should not be much force used in this way. Immersing them also in water is often useful. The water should not, in general, be very cold, tepid or warm being often the best.

MOUTH, OR ORAL BATH.

For inflammation of the gums, mouth, throat and palate, in slimy secretions from the throat and stomach, in toothache, catarrh, colds and chronic hoarseness, garglings and baths for the mouth are of great service. Pauley, a merchant of Vienna, has been thought singular for his zeal in recommending this bath. Clergymen and others who suffer hoarseness by much speaking, will find that holding very cold water in the mouth until it begins to grow warm, and then ejecting it, and by frequently repeating the process, much benefit will be obtained. For falling or elongation of the palate, in which it is now so much of a professional hobby to clip off the part, the gargling sufficiently with cold water will be found a never failing remedy. Coughs and tightness in the chest may often be essentially relieved by this bath. In mucous secretions from the throat and stomach, by ejecting the water a number of times, it will surprise those who have not witnessed the remedy to see the amount of slimy secretion thrown off.

WET COMPRESSES.

A compress consists of two or three folds of soft linen or cotton wrung out of cold, hot or tepid water, applied to the affected part, and covered by a piece of oil-silk, gutta-percha foil, India-rubber cloth or woollen, which should project a little beyond the wet cloth on all sides, so as to prevent evaporation from the linen. In parts subject to considerable motion, as the throat and neck, the edges of the oil-silk should be folded in over the wet linen so as to prevent its exposure to the air. For persons with feeble reaction, the compress may be wrung out of warm water before applying it, and in colic and other painful diseases the hot compress is most frequently indicated.

Compresses are generally best applied at night, as it is often impossible to keep them in *close apposition* while moving about. After removing them in the morning, the parts should be sponged with cold or tepid water to restore the tone of the skin.

Abdominal Compress—This consists of two or three thicknesses of linen, from about six to nine inches wide and long enough to go round the whole body, or the linen may only cover the front part of the abdomen, or even only the seat of uneasiness; this should be wrung out of cold, tepid, warm, or hot water, covered with oil-silk, and secured by a flannel or linen bandage with strings. This may be worn several nights in succession, the parts being well sponged with cold water, and rubbed with a coarse towel on removing

it in the morning. The abdominal-compress is very valuable in typhoid fever; it tends to control diarrhea, checks the spread of ulceration, and so lessens the danger of perforation, or opening in the bowel. In constipation it is often a most useful adjunct and in diarrhea it relieves irritation and facilitates the cure.

Compress for the Throat—A piece of linen or flannel should be wrung out of cold water and wrapped in two or three thicknesses around the throat; this should be covered with oil-silk, and over all two or three thicknesses of flannel to maintain the warmth. When this is applied the patient should retire to bed and he will generally have the satisfaction of finding his throat-difficulty much relieved by the morning.

Chest-Compresses—In bronchitis and other inflammatory affections of the lungs or pleura, the use of wet compresses, after or before poultices, greatly aids the action of the medicines. Compresses adapted for the chest and other parts may be obtained from most Homœopathic chemists.

Sores, ulcers and tumors are often benefited by compresses. In local forms of rheumatism, as lumbago, some inflammatory affections of the knees, ankles and other joints and in sprains and other injuries, they hasten the cure.

The appearance of a rash or eruption of pimples after the continued use of the compress is regarded as favorable. If the rash be very troublesome, the compress may be discontinued and glycerine and Cologne-water in equal parts smeared over the eruption.

Spinal Hot-water and Ice-Bags—In many female derangements Chapman's spinal bags are of great utility when judiciously used. The ice-bag requires greater caution than the hot-water bag, especially during pregnancy.

TURKISH BATHS.

The Turkish or Thermal bath for the home, is something to be greatly desired. An apparatus for administering it can be made with very little trouble and expense. This bath can be given satisfactorily by any woman of ordinary common sense. Take a chair with a wooden seat, a simple office arm chair will do, and place in it a piece of flannel blanket so full that it will fall over in front and behind. Place a coffee cup one third filled with alcohol under the chair. When another vessel is used, be sure that the opening is no larger than that of a cup, as that space allows sufficient surface for the combustion of the alcohol. Have in front of the chair a foot tub containing warm water for the feet. Seat the patient, after all clothing has been removed and envelop her closely in woollen blankets. These should extend over her in front and back, outside and around the chair. These preparations completed, light the alcohol with a taper. Take no risk of burning yourself by using a match. Perspiration will begin in from three to five minutes.

Should blood rush to the head, causing a red face or fulness about the brain, place around the neck a napkin wrung from tepid water. This is preferable to douching the head, as it has the advantage of not spoiling the arrangement of the hair. With the first bath, she is liable to become faint or sick at the stomach, in which case have her drink copiously of hot water or ginger tea. Should the perspiration be slow in starting, or the heat become too intense, bathe the surface with a sponge dipped in cold water. Let her remain fifteen or twenty minutes, or as long as is necessary to induce copious perspiration. That accomplished, she can be rubbed and bathed while sitting in the chair. If feeble, and longer perspiration is desirable, transfer her to a bed or lounge, still enveloped in the blankets, where she can be bathed under cover, if need be. The manipulation should be thorough. Press, knead, pinch and squeeze every muscle in the body, using only the fingers and wrist. The use of the entire arm and palm of the hand in the process of massage makes hard work and does not give as good results. She should remain on the lounge or couch for an hour to rest, cool and sleep.

This is a simple and inexpensive apparatus, and can be constructed and used in every home. The bath should not be taken earlier than two hours after eating, otherwise it is almost impossible to start perspiration; besides it interferes with digestion. Before ten or eleven o'clock in the forenoon is the best time for invalids to take the bath. Persons engaged in business can take it upon rising in the morning or just before going to bed. There is no risk in going out after the bath as the danger of taking cold is small when the vapor bath is immediately followed by tepid or cold sponging, or still better the dripping wet sheet.

The Thermal bath can be taken at least once a week as a sanative measure. For diseases, the frequency depends upon the case. There is usually nothing enervating about the bath, as many invalids gain strength with its daily use. It is alike valuable in health and disease. The healthy action of the skin is procured by it as by no other bath. The excretory organs are relieved, the system cleansed and healthy action procured.

The circulation of the blood is equalized and local congestions of any and every part are removed, which are the most important things to be sought in treating diseased conditions. For purifying the blood it is the quickest, easiest and most effectual means known. The blood is literally washed of impurities by it. Pure water is taken by the patient, absorbed, passed into and mixed with the blood, by which it is carried to the capillary net work of the skin and poured upon the surface in the form of perspiration, not pure as when it was taken into the stomach, but commingled with the impurities in the blood. The nervous system is soothed and tranquilized by it, and the cobwebs of care are swept from the brain, leaving it clear and refreshed. It is especially useful in the treatment of all diseases arising from impurities of the blood, inactivity

of the skin, local inflammations or unbalanced nervous action. For drug poisoning, scrofula, consumption, skin diseases, dropsy, remittent and intermittent fevers, coughs, colds, catarrh, croup, gout, rheumatism, neuralgia, bronchitis and diseases of the liver and kidneys, it is very efficient. A cold in the first stages will be broken up by it and alleviation will ensue at any stage. It should be taken about the time the chill is anticipated for ague and be given thoroughly. Few cases resist a third or fourth bath without any other means. There is no equal to it for chronic rheumatism, and for that it may be taken every day, some even have taken it twice a day with great benefit. Cases of longstanding have entirely succumbed to this treatment. Nearly all the eruptive diseases are benefited by it. In pregnancy it is also valuable when there is dryness of the skin and coldness of the surface with sensitiveness to cold. Where the pregnant woman has any of the diseases named above, this bath will sometimes be found as efficacious as if she were not enceinte. If a good skillful attendant should attend her and ample time be taken to rest after the bath, no disastrous results need be feared, as the bath may be taken as often as twice a week during the entire time of pregnancy, when it is found to agree.

SPIRIT-VAPOR BATH.

This is similar to the Turkish bath, is very powerful in beneficent effects upon the whole system, and contributes not a little towards the removal of disease. It is one of the best methods of inducing activity of the vessels of the skin, and was first introduced to the medical profession more than twenty years ago, we believe, by the accomplished Prof. King; since which time, especially, it has been very extensively used as a remedial agent. One of the many advantages of producing perspiration in this way is, that it is unattended by the injurious effects which too often follow the administration of sweat-producing medicine.

The method of giving this bath is as follows: The patient is to be in a night-shirt or other clothing, to be worn only while sweating and during the night, if the bath is taken at bed-time. He is then seated on a high wood-bottomed chair, or any other, provided care is taken that the bottom is so covered that the flame will not burn him. Then a large blanket is thrown around him from behind, covering the back of his head and body as well as the chair, and another passed around him in front, pinned so loosely at the neck that he can put it on or off his face as occasion may require during the bath. The blankets must join each other at the sides and reach the floor, so as to prevent the vapor from passing off. Then a cup containing two tablespoonfuls of whisky, or any other spirit that will burn, is placed upon the floor directly under the center of the chair, and lighted by introducing from behind a piece of burning paper. The liquor is allowed to burn until consumed, and

the operation repeated one or more times if the patient does not already sweat freely enough, which he will probably do in from five to ten minutes.

If during the operation he feel faint or thirsty, cold water must be sprinkled in his face; he may drink one or two swallows, or even have his head bathed with it.

Then, when free perspiration is produced, wrap the blankets around him, put him in bed, cover him warmly and give him hot teas to drink. After two or three hours remove the covering piece by piece, at intervals of about half an hour, so that he may gradually cease to perspire.

Ordinary precautions will prevent his taking cold, and he may go to business the next day.

This mode of producing perspiration is highly recommended in severe colds, pleurisy, rheumatism, diarrhea, dysentery, feverish and inflammatory attacks, etc. In acute diseases it may be practiced once a day; in chronic, once or twice a week, according to indications of its necessity.

BATHING CHILDREN.

In bringing up children one of the most important things is the bath. Mothers often lay the foundation for sickly constitutions, solely by neglect of the bath or by improper bathing of the child. Children as well as grown people should not be bathed until some hours after meals. A time should be fixed and nothing else allowed to interfere with it. Great care must be taken to avoid draughts, and under no circumstances should there ever be any delay in enwrapping the body or in vigorously wiping it dry the very instant it leaves the water. The water should be tepid, or moderately warm, and have a handful of salt or a little boracic acid dissolved in it. With a soft piece of old linen dipped in this water, the baby's tongue, gums and roof of the mouth should be first washed, then the eyes and the head, which should be wiped dry before proceeding. It is then ready to be placed in the bath and bathed all over. It should not take over five minutes. Very little soap should be used, and that only of the very best obtainable. When through it should be taken out at once, wrapped in a large bath towel and wiped quickly. Then with a dry, soft towel rub until a slight glow appears on the skin. If the child is weak it is well to follow this by rubbing it with a sponge dipped in diluted alcohol, about a teaspoonful of alcohol to a small washbowl of water. If it is inclined to chafe, dust the parts with powder, made in the proportions of an ounce of talcum to a drachm of boracic acid. This is the best infant powder in use, and is cheaper and better than the expensive preparations sold at drug stores. The reprehensible habit of bathing children one time in the morning, and another at night, or perhaps during the day, as best suits convenience, should by all means be avoided. Likewise the habit of bathing the child, sometimes five or six times a week and again only once or twice a week, is a matter

that cannot be too severely condemned. Dr. Braithwait, a specialist on children, states that frequently diseases and deaths of children are due to improper and irregular bathing. It is highly essential that the child should be bathed at regular intervals and as nearly as possible at the same hour each day.

BATHING FOR ADULTS.

Superior Mode of Bathing. The most advantageous mode of bathing is the SWIMMING BATH, whenever an open sea, or river, or pond, or pool is at hand. Swimming should never be practiced more than once a day, and about midway between the two meals.

Sometimes and with some people ten minutes' duration of the swimming bath is even much too long, and again it may be extended to twenty or thirty minutes when accustomed to it. After the bath the skin must show a healthy glow, otherwise it will be recognized that the bath was too lengthy.

When Bathing is too Frequent. When bathing is followed by itching, or a persistent redness, or wheels, or pimples or watery heads, the person so affected has remained too long in the bath or it has been too frequent. It should be remembered that when a feeling of comfort follows taking a bath, it is of special value, otherwise not. Persons who are in a weak, debilitated condition from any cause, and especially sickly, delicate children, should have a sponge bath in a warm room or under cover. But all healthy or robust persons should have a complete bath daily in the summer; other seasons of the year every second day. Ten o'clock A. M. is the best time for taking the bath. Bathing in cold rooms and in cold water is nearly always injurious, except to the most vigorous constitutions. Sometimes people are injured from their baths because of a want of knowledge as to the proper time for bathing.

Proper Time for Bathing. Baths should not be taken for two hours after eating a meal, three is better; nor taken when one is excited, overheated or exhausted. The neglect to bear in mind these plain facts has brought on many severe afflictions. The bath may be taken in the morning before breakfast. It may be taken, though not the best time, before retiring at night, provided it is at least two hours after the meal. Bathing should be regular, the same time each day, the system then becomes accustomed to it, and readily accommodates itself to the act.

Cold, Hot or Tepid Bath. Most authorities agree on the fact that as a rule individual inclination should be consulted as to the kind of bath that is best adapted to the individual. When a cold bath is disagreeable and repugnant to a person's feelings, it is not the character of a bath he should take, and vice versa. This same rule should apply with equal force to the kind of bath that should be given children. Too much stress cannot be placed on the *regularity* of the bath, whether it comes once a day, once in two days, or less frequent. Don't

let it be haphazard. And the same rule should apply as to the regularity of the time of day the bath is taken. It should not be taken as it is often done, sometimes in the morning, then again at night; uniform periods should be adopted.

Hot Bath. Bathing in hot water is almost always debilitating and would better be avoided. The pain of colic, though, is frequently relieved by immersion in a hot bath; in case of cholera the patient, also, is likely to be greatly aided by the hot bath. Fevers that fail to yield to ordinary remedies have been lowered in this way. In such cases, however, the advice of the attending physician will usually be followed. Persons in average health and children should not bathe in hot water.

HYDROPATHIC TREATMENT OF DISEASES.

APOPLEXY.

Treatment—First remove all constriction from the throat and neck; second, take the patient if possible into the open air; at least have the windows and doors wide open, so that breathing may be aided as much as possible. Then place him in such a position that the head may be elevated, so that by gravity the blood may the more readily descend. Take care that the head neither falls backward, nor forward upon the chest. Rapid friction over the wet-sheet, with wet towels, or the hands wet in cold water, should then be made in the most vigorous manner, with the view of drawing the blood from the head. At the same time the head should be cooled as much as possible, and as soon as there is a little abatement in the symptoms water should be poured upon the head, without however letting the part lie too low. Cold-water clysters are also useful. The treatment should be perseveringly followed till the patient grows either much better or much worse. Afterward the patient should be managed according to the symptoms of the case. The *rationale* of the above treatment will be readily understood. The great object is to arrest the current of blood towards the head and to prevent the hemorrhagic tendency. The frictions act admirably in answering the first indication and the cold upon the head the second; for the constrictive power of cold in arresting hemorrhage is now well understood. In case the circulation has become depressed, with pale and cold surface, we should of course use hot applications to the body and tepid to the neck. But even here the effort of wet-hand friction in rousing the dormant vital power will be found highly serviceable.

ASTHMA.

In treating the asthmatic fit, the wet-sheet, well wrung and faithfully applied, is the great thing. Repeat it two, three, or twenty times in succession, as the case may need. There is no danger of doing harm, or of giving the patient a cold, so long as the nervous excitement is upon him and the difficulty of breathing continues. If the sheet cannot be had, a good washing with towels, the water always cool or cold, is very useful. The wet-jacket or chest-wrapper, or wet towels about the chest, are all useful, if the weather is not too hot. When that is the case, we must depend upon the washings simply.

LOSS OF APPETITE.

Treatment—One of the best evidences of the value of water-treatment is its power to restore a lost appetite. The reason why

the hydropathic processes act in this way is, that they promote a rapid change of matter in the system, and at the same time a tonic or invigorating effect. Water-patients uniformly get a good appetite in a short time after commencing the treatment. Exercise is also valuable.

BOILS.

The water-dressing, that is, applications of wet linen, frequently renewed and kept at a temperature which is most agreeable to the feelings, is beyond doubt the best local remedy we have for boils. General ablutions in water, tepid or cold, according to the season of the year and the patient's strength, will be found highly serviceable. The wet-sheet pack is also an invaluable means. It will surprise any one who is not acquainted with matters of this kind, to witness the salutary effects of these general applications upon the affected parts. A tepid bath simply will often relieve pain and irritation to a degree which no one who had not witnessed it could believe.

FALLING OF THE BOWEL.

A tepid sitting bath, long continued, would in such a case prove highly beneficial; it would not only be a means of relieving pains and soreness, but would bring down the inflammation and size of the protrusion and thus facilitate its return to its normal position. One of the best possible means of preventing the pain—and this is very excruciating at times—is to envelop the patient in the wet-sheet. It may be used in the half or folded form, or the entire envelopment may be had recourse to. Its action in such cases is that of a great and soothing poultice, the good results of which can be appreciated best by those who have experienced its salutary effects. I should remark that the abdominal wet girdle should be worn constantly night and day, in all these cases, until a cure is effected. It is an invaluable means of promoting the vigor of the stomach and bowels and is thus an excellent auxiliary in the treatment.

BILIOUS ATTACK.

Let the patient drink water—pure and soft, if he can get such—in considerable quantities; six, eight, ten, or more tumblerfuls in a day. This process will purify his system by removing effete material and stimulating the liver to healthy action. And if he can add to this process a few packs, clysters, sitting-baths, half-baths, rubbing-sheets, head-baths,—as many, in short, per diem, as the symptoms may demand, in connection with moderate exercise in the open air, he will be made a new man soon enough.

JAUNDICE.

The treatment for this disease is the same as the foregoing, and in addition, kneading over the region of the liver and gall bladder so as to re-establish the flow of bile.

CRAMPS.

Friction with the hand wet in cold water is evidently better than the dry application, or that by means of spirits, ointments, etc., which have sometimes been resorted to. The wearing of wet bandages at night upon the part liable to be affected will often at least ward off the attack.

COLIC.

The treatment of a fit of common colic is in general simple, and the cure easily effected. The great thing is to clear the stomach and bowels as soon as may be of their morbid contents. One or two full injections of warm water will often suffice. But in some cases it is necessary to persevere, long and hard. Gallons upon gallons of water are given, both at the mouth to cause vomiting and the bowels to clear them of their contents. We use also warm or hot sitting-baths, prolonged as much as may be found necessary, with a good deal of rubbing the bowels with the wet hand. Going at once into a bath is a valuable thing in some cases and no one will get harm from hot water while the pain is upon him. In some cases warm-baths may also be used in alternation with cold; and hot and cold compresses might be used alternately while the sitting-bath is taken, the feet may be placed in warm water and the same may be done after any of the cold applications. It does no good to keep the feet very chilly in such cases. We should persevere with the several methods, one or more of them accordingly as we may, till relief is obtained.

CATALEPSY.

Treating catalepsy should be managed for the most part the same as hysteria. If there be great rigidity of the muscles, a large amount of wet-hand friction may be necessary. The water should be used cold, warm or hot, according to the patient.

CONVULSIONS.

In the convulsions of children the warm bath is found a most useful remedy whether the disorder originates in worms or other causes. It seldom fails in stopping the paroxysms, at least for some time, and thereby giving an opportunity of employing the means fitted to remove the particular irritation. In early infancy it should be used with caution, and generally by affusion, tempering the water according to conditions. When the vital energy

seems much exhausted the remedy should be avoided entirely and friction substituted. The benefit derived from the cold-bath in convulsive diseases depends on its being used in the paroxysms of convulsion; its efficacy consists in resolving or abating the paroxysm; and when this effect is produced, the return of the paroxysm is greatly retarded, if not wholly prevented.

In many cases the shallow-bath, rubbing wet-sheet, and other forms of applying water by wet friction, will be found to prove more successful than the above methods. Cold affusion on the head, particularly when the part is hot and the patient not very weak, is a valuable remedy in many of these cases. Cold injections, if the patient is not particularly weak, and in other cases the tepid, should be used freely in all convulsive attacks. It matters not so much whether the bowels are constipated or otherwise, the effect is good. In all the water management of these cases, of course, we should do no violence to the system and the treatment should be managed prudently, according to the patient's constitution and the nature of the attack.

All kinds of convulsions are to be treated on the same general principles, whatever the cause. The great thing is, to rouse the blood into a better and more general circulation. Pouring cold water on the head would seem to promise well in cases where there is much determination of blood to the head.

CHOLERA.

The dripping-sheet, with the brisk rubbing upon its surface, is, as I have before said, a powerful means of relieving spasms, arising from whatever cause. The dry-rubbing, which is not a tenth part as good as the wet, was found in Paris sufficient to render calm and quiet the poor sufferers when the terrible spasms were upon them. The water-drinking and vomiting in nausea cleanses the stomach, produces a tonic effect upon its internal surface, and thus forestalls vomiting in cholera. It helps moreover to cleanse the bowels and prevent the diarrhea. Priessnitz used the deep, cold hip-bath for the reason that it has a very powerful effect in constricting the opening capillaries of the mucous membrane of the stomach and alimentary canal generally, and in arresting the vomiting and discharges from the bowels, but as hot water has the same effect and is much more lasting in its results it is to be preferred in nearly every case. Each and all of these applications, if energetically persevered in, tend most powerfully to keep down the inordinate burning and thirst.

CONSTIPATION.

As local applications, in this condition, the sitting-bath and wet-girdle, worn night and day, or nights only if it is not practicable by day, are invaluable means. It is of great importance to

attend well to the condition of the skin. The mucous membrane of the bowels has great sympathy with the condition of the skin. To maintain this in a healthy, vigorous state, the rubbing wet-sheet, the towel-bath and the daily shower, where this is well borne, are valuable remedies. The bathing should be followed daily and semi or tri-daily, should there be need in the case.

COUGH.

Treatment—One of the best palliative means for the cough, when consumption has not proceeded to a great extent, is to make the body naked, and wash the surface with pure water, especially the throat and chest. Even washing the feet will often relieve a troublesome cough.

The difficulty of breathing, which often attends lung-complaints, may be greatly modified and relieved by the washings and wet-hand frictions, such as I have recommended for cough.

The power of water to promote the strength of the living tissue is nowhere more strikingly exemplified than in the treatment of hectic night-sweats. With every thing besides well managed, it would seem that these debilitating night-sweats can be effectually checked, to the very last. Often have I known persons who have sweltered for weeks and months nightly with perspiration, in whom it was checked altogether by the simple effect of cold water, and wet frictions upon the surface. Nor would I have the water applied very cold; only of such temperature as the patient can bear, that is, can get comfortably warm after. In proportion as these night sweats are checked by water is the strength supported, the health made more comfortable in every respect, and, to all appearances, life materially prolonged. These washings may be practiced two or three times daily, with the view of invigorating the surface. Pure, fresh water—the purer and softer the better—should be used.

As a palliative means to be used in the fatal diarrhea which occurs towards the last of consumption, pretty copious injections of lukewarm or tepid water into the bowels, will be found a most excellent means. It serves to soothe the patient, and at the same time supports his strength. Have a good instrument, and resort to the internal rinsing at every time when the bowels act unnaturally. Use it either just before, or after, or both. Be the diarrhea of whatever kind, this is a most excellent remedy.

There is no magic, I will remark, as to the particular form of bathing. Any good ablution—the dripping-sheet, as it is called in our hydropathic works, the affusion of water, the washing of the body in a wash tub, or merely by wet towels and the wet hand—all of these are good modes. The shower-bath, it is to be remarked, is one of the most severe of all; hence should not be used in this disease.

DIPHTHERIA AND CROUP.

If we wash and rub the chest with the hand wet in cold water, and put upon it a wet bandage—methods that are alway salutary for a cough—we do good, although the attack may not prove to be one of croup.

In a violent attack of croup we could hardly do too much while the general fever and inflammatory symptoms are present. Sometimes it may be necessary to bathe the child every hour, or even oftener. At all events, we should give baths enough, change the bandages often enough, and wash and rub the chest sufficiently, to keep the breathing good and the croup in check. Tepid or cool affusion—tepid if the child is weak, but cool if the contrary—with wet hand friction upon the throat and chest, with the constant use of wet bandages upon these parts, constitute the sum and substance of the best of all known methods of treating this disease. An essential point is that the compress on the throat should be put on neatly and be fastened snugly to the throat. There should be no loose ends or edges to chill when the head is moved. This should be snugly covered with a woolen compress, but care should be taken that neither of the compresses are so tight as to interfere with the circulation or breathing. The compress should be quite cold and changed often; with very weak children it need not be very cold. In diphtheria the water should be ice-cold. *In both diseases the compress should be used constantly.*

CORNS.

It is an instructive fact in regard to corns, as also warts, bunions, etc., that a course of water-treatment generally removes them wholly, or prevents all pain. Those who bathe habitually in cold water are seldom troubled with corns.

CHAFING.

In all cases perfect cleanliness—the most strict and constant—is the great thing. In the case of infants use a soft sponge and the purest, softest water that can be obtained. It is not necessary that it be very cold; it may indeed be used quite lukewarm, *but never hot*. To secure the most perfect cleanliness, use a little mild, unscented soap now and then, if necessary. Use the sponge and water, three, four or more times each day.

CHAPPING.

I know of no means so good for chaps as the water-dressing, mixed with a little glycerine and suited to the feelings of comfort. Nights especially this remedy may be advantageously used. If we can but manage it rightly, it will cure in a shorter time than any other application we can make.

DRUNKEN FIT.

Treatment—In no respect is the curative power of water more striking than in its effects upon a drunken person. The great thing is to pour plenty of cold water upon the head, till the patient "comes to." The dripping wet-sheet, shallow bath, and all other means of cooling are also useful. If we can vomit the patient plentifully with tepid or warm water, so much the better. Cold injections, in the fit especially, are very useful. Treated in this way, much of the headache, nausea, feverishness, etc., that follow a debauch, are thrown off. Sailors understand well the proper method of bringing a drunken man to his senses. If one of their number becomes intoxicated, they tie a rope about him and throw him overboard into the sea. The shock quickly arouses his senses, and the submersion serves to remove the fever.

DELIRIUM TREMENS.

The great thing in treating delirium tremens is to cool sufficiently the whole mass of the circulation; to do this we can hardly go amiss in the use of cold water, applying both externally and internally in the most profuse manner, although we should not apply the douche or allow water from a height. Water will make the patient sleep when nothing else will.

DYSPEPSIA.

In the first place, the dyspeptic should take as much exercise in the open air, regularly and daily, as he can bear without exhaustion. He should become fatigued, but not exhausted.

In the second place, he should go to rest early and at the same hour every night. He should also rise early in the morning and observe the same regularity as to time. If he should not happen to sleep well every night, he should yet observe these rules strictly. His bed and pillow should be hard rather than otherwise, his sleeping room as airy as may be, and he should use only enough clothing to be quite comfortable.

A most important rule is, that the dyspeptic eat precisely at the same hour each day. If he is unavoidably thrown out of his time, he should drink some water and wait till the next regular meal. The utmost regularity in the times of eating is of the greatest importance to one who is suffering in this way.

The most important rule of all regarding aliment is that which relates to quantity. First, quantity, and second, quality, both of which are of great consequence in their place. The rule of all rules is, not to over-eat. If the dyspeptic will but persevere in taking that amount, and that amount only, however small it may be, which his stomach can receive and digest comfortably, he will soon find himself on the high road to health; and it will surprise any one to

find on how small an amount of nutriment—wheat-meal bread, for example—he can subsist and grow better. I repeat, then, *the dyspeptic should not oppress his stomach with food*, and should eat only those articles that agree with him. If he can take only an ounce, or the fourth part of that amount, let it be so. If he will persevere in *not oppressing himself*, he will soon grow better and be able to take more. Flesh, he should remember, is no sort of criterion for health.

I lay down this important rule, however, that the dyspeptic should take the most healthy articles for a healthy stomach. *But be sure to regulate the quantity accordingly as the stomach can bear.*

As regards water-treatment proper, everything that is calculated to promote the tone and vigor of the constitution is a help in dyspepsia. The whole force of the treatment is brought to bear advantageously in many cases. The timid are particularly advised to try the free use of the rubbing wet-sheet.

DYSENTERY.

If I were to give in a few words the great golden rule, for treating dysentery, as well as cholera-morbus and bowel-complaints generally, it would be, *keep the bowels cool, the head cool, and the extremities warm.* If all this were done faithfully in all cases *from the first*, few, very few, would ever die of such attacks. But all of this implies good judgment, skill and perseverance. In dysentery, for example, a sleepy parent allows the disease to progress for half or the whole of a sultry night, and in the morning it may be too late. The fatal work is done. I repeat, such attacks must be taken at the very first.

The tepid hip-bath is an invaluable remedy in this complaint. If there is in the whole range of human diseases one instance wherein a remedial agent can be made to act in a manner most agreeably efficacious in subduing pain, it is the sitting-bath in this. In the tormina and tenesmus of dysentery, a child may be writhing in agony a great portion of the time; opiates and injections and all other remedies fail in bringing relief; if the child is set or held in a tub of tepid or warm water the pain will soon cease. If the remedy is used sufficiently often, the water being of proper temperature, we are certain of securing our object so far as the relieving of pain is concerned. Whether the patient can live is another question; but if death even must be the result in any given case, it is certainly very desirable that we make this death as easy as may be. This every parent can well appreciate.

Let this bath be used thus: A common wooden tub is sufficient, the size being suited somewhat to the patient's age. It is better to elevate the back of the tub a few inches by placing under it a brick or a block of wood. If the tub is of pretty good depth, all

the better, as we wish to have the water come as high upon the abdomen as may be; but if the tub is shallow, the water can be poured higher upon the body by means of a cup; or a sponge or towel dipped frequently in water may be used. Make thorough work in cooling the bowels and then the pain will cease. If it is a young, feeble child, let two persons hold it, one to support the head and upper part of the body, the other, the feet outside of the tub. In some cases the feet should be placed in warm water at the same time. The feet also may be rubbed with the dry, warm hand or warm cloths; or other moderately warm applications may be made.

If there be great soreness of the anus, or external opening of the lower bowel, a heavy, wet compress should be placed upon the part. Wet a heavy diaper and apply it as for a young infant. This may be double or treble, according to the necessity of the case. This accomplishes much in relieving and preventing the soreness alluded to—the excruciating torture so often attending the disease.

I would give the child all the liquid he desires. I would even encourage him to take more rather than less; and the best liquid for all, for this purpose, doubtless, is pure soft water—the purer and softer the better. People may everywhere have pure soft water if they will only be at the expense (which is on the whole, a moderate one) of catching the water as it comes from the clouds. But use even hard water, rather than any other drink. Boiling the water, if it is hard, improves it somewhat.

CELLULAR DROPSY.

As this condition is very frequently the result of diseases, either functional or organic, of some of the vital organs, particularly the heart, great care should be taken that too great a shock is not given to the system. The water used should be suited to the patient's feelings, but should be as cold as is consistent with comfort. A good share of friction is advisable on the ground of stimulating the excretory organs generally. The rubbing wet-sheet, well wrung and followed by a thorough rubbing over the dry sheet, is a valuable remedy. The skin should be preserved as much as may be, and hence it is better that the friction (which should be often and freely made) should be with the wet hand or over the sheet. Moderate showering or douching are also valuable aids in case the debility is not so great as to preclude the employment of these remedies.

EARACHE.

We use head-baths, wet-sheets, general baths, wet compresses—in short, the soothing, sedative and febrifuge treatment generally, according to the severity and persistency of the case. The extremities are to be kept warm; the warm foot-bath is useful now and then. So also the general warm and the vapor bath.

ERYSIPELAS.

The great thing is, to keep down the general fever. Do this from first to last, both night and day, and all goes on well. The local applications (wet cloths), repeated often and suited to the patient's comfort, are also useful. Be especially careful to keep the head cool; pour water upon it as much and as often as necessary, and use wet towels; keep the feet warm. Water drinking, clysters and spare diet when the appetite comes, are also to be thought of. Bathe the patient as often during the night as may be necessary to give him sleep. No disease requires a more prompt treatment than erysipelas of a malignant type. So that the feet are kept warm, it is nearly impossible to do too much. Allow of no remedy other than water, without the advice of a good homeopathic physician.

SMALL-POX.

We are to treat small-pox on the same general principle as all severe inflammations, namely, to keep the fever in check from the beginning to the end of the disease. As to how much water drinking, how many baths, wet sheets, compresses and bandages, and what the temperature of the water, all this must vary according to the nature, severity, and other circumstances connected with the case. No other treatment can at all compare with this for comfort, in so desperate a disorder.

MEASLES.

Treatment—First, we are to keep down the general fever, as in all inflammatory diseases. In accomplishing this we do not send the eruption *in*, but aid nature in bringing it *out*. A single tepid bath, a pack, or a tepid bath, if the patient is not very weak, will often bring the rash upon the surface as by magic, while all the other symptoms are relieved in a remarkable manner. We use then the wet pack, and tepid or cold ablutions—each one or all of these as may be convenient, or as the case may require.

EPILEPSY.

Cold affusion upon the head, in the manner recommended in hysteria, is highly useful. We know that in such cases there is turgescence and too great fullness of the blood vessels in the brain. Cold, by its constrictive effects drives away the superabundance of blood, thus moderating and shortening the fit. The effect of cold on the nervous system in these cases is also beneficial; it rouses the dormant powers of the system, and aids in preventing the debility that follows such attacks.

NETTLE-RASH.

Nettle-rash is to be treated actively, according to the symptoms. The tepid and warm baths are valuable; so also the wet pack.

FELON.

Keeping the inflamed member constantly immersed in ice-cold water forms the most effectual means of arresting the inflammation and preventing its rising to a head; and that this mode is certain to subdue the pain most effectually, every one who has the opportunity may test for himself. This is an affection in which we have a perfect demonstration of the great power of cold water to quell pain. Severe as it may be, we immerse the part in very cold water, when all at once the pain grows less and soon dies away. Keep it thus immersed, taking care to have the water very cold, and the pain does not return.

FLATULENCE.

Treatment—The great thing is to remove the cause or causes of the disorder as far as they may be known. The case should be managed in all respects like one of dyspepsia. Clysters, sitting baths, and the wet girdle are highly serviceable. If the patient can avail himself of the advantages of a thorough hydropathic course at an establishment, so much the better.

FAINTING-FIT.

Sprinkle a little cold water in the face, give a little to drink, and wait patiently for Nature to take care of herself.

SCARLET FEVER.

The disease has been cut short by taking the patient out of bed and pouring cold water upon him. The heat of the body is so great in this disease, that no danger is to be apprehended from the cold affusion. It is true, there are cases where the patient is more or less chilly; but if in this affection the general rule I laid down in the case of common fever be followed, there is no danger whatever, but the greatest advantage, in taking the patient out of bed (however hot he may be) and pouring cold water upon him. I have a preference in this disease for the dripping wet sheet used at least three times a day and in severe cases oftener. Dr. Danforth, of Milwaukee, Wis., has used compresses wet in a solution of carbonate of soda, which he applies constantly over the whole body, changing them as often as they become dry. From the results obtained by him, I should not hesitate to resort to this procedure in a severe case, but in mild cases it would hardly be necessary to keep the patient so closely confined to the bed, as this would necessitate.

INTERMITTENT FEVER.

In the chilly stage, or, still better, somewhat before it, when the premonitory yawning and slight rigors appear, immersion in the hot bath, or the vapor bath, continued until the reaction is complete, will be found effectual—in many cases, at least—in preventing the coming on of the hot stage, and giving rise in its stead to a mild perspiration.

The treatment of the hot stage is very simple. We manage according to the pulse, and the amount of fever, just as we would in any other case. Affusion with cold water, dripping sheets, half-baths, the cold-bath, tepid-bath, and even the warm-bath, as before remarked, bring down the heat and pulse in fever; any or all of these methods we may use; in short, the whole of the cooling plan, according to the case. And what is truly admirable in this treatment is, we prevent the sweating stage.

The diet is a matter of great importance in ague. An improper meal is sufficient, in many cases, to bring on an attack even after the paroxysms have been checked. I have known patients who had just recovered from ague, and were going about comparatively well, by eating a hearty supper of warm biscuit and butter, and the like articles, to be attacked again the next day as badly as ever.

BILIOUS AND REMITTENT FEVER.

Treatment—This is to be conducted on general principles. The important object is to keep down general fever. It is also important to purify the system as fast as possible. For this purpose the wet pack is the most useful of all known remedies. We can advantageously give three or four of these applications daily, when the pulse is full and bounding, and during the intervals have the patient almost constantly in the folded sheet. If he is able to sit up a part of the time, a large wet girdle should be employed. Frequent clysters are sometimes useful, and the patient should drink as much water as he can, without oppressing the stomach. It may be taken warm for the diluent effect, if he is at all chilly.

CONGESTIVE FEVER.

There are two forms of congestive fever, requiring directly opposite forms of treatment. When the congestion is accompanied with high fever, headache, and even stupor with flushed face, which symptoms are generally present when the brain is the suffering organ, coldness and friction constitute the great remedy. In another place I have spoken of the Parisian treatment of cholera, which consists of a great deal of friction with the hands wet in cold water—for the water is of a moderate temperature in that country—and water is also freely poured upon the patient. This is in effect the half or shallow bath of Priessnitz, which can be well enough imitated by

using a good-sized wash-tub, there being two or more persons to aid in the operations. When the patient is too weak to be held up, he can be laid upon a couch, cot or straw-bed, and the friction may thus be practiced, with wet sheets placed upon and about him, and frequently renewed. At the same time the freest circulation of air should be allowed in the room, and if the weather is not decidedly inclement, it would be of great benefit to have the patient in the open air. Fresh air and coolness, generally, are what he most desires, and his feelings should be gratified to the fullest extent while the fever is upon him. Now it is scarcely within the range of possibility to give a patient a cold under such circumstances—a fact which it is of the greatest importance to remember. These frictions, besides, are to be continued as frequently and as long as may be necessary to produce the desired result. A great advantage of the treatment is, that if it is not possible to cure the patient, which I think can seldom happen if the case is taken in season—it renders the sufferings much less than they would otherwise be. The water need never be so cold as to do much violence to the patient's feelings. From 60° to 70° would be safe in the generality of cases.

The patient should at all times be allowed what drink he craves; and, singular as it may appear, warm water is found to quell the thirst and vomiting when present better than cold. In the other form the patient is pale, the hands and feet are bloodless and cold although he may have a feeling of heat and a desire to be uncovered. Vomiting and purging are sometimes present to such a degree that it is difficult to distinguish the disease from cholera, and the treatment is to be the same as for the latter disease.

In all forms of congestive fever its malarial character is to be kept sight of and treatment kept up in the interval between the paroxysms.

The cold or tepid sitting-bath should not be neglected at this time, especially after the violence of the disease has somewhat passed off. The wet girdle should also be used all, or nearly all of the time, and a semi-daily pack, followed by the rubbing wet-sheet, or the shallow-bath, would aid the patient much in his recovery.

YELLOW FEVER.

The celebrated Dr. Rush, speaking of the means used in his practice in the epidemic yellow fever that raged so fearfully in the city of Philadelphia in the year 1793, gives the following testimony concerning the effects of water:

“Cold water was a most agreeable and powerful remedy in this disorder. I directed it to be applied by means of napkins to the head, and to be injected into the bowels by way of clyster. It gave the same ease to both, when in pain, which opium gives to pain from other causes. I likewise advised the washing of the face and hands, and sometimes the feet with cold water, and always with

advantage. It was by suffering the body to lie for some time in a bed of cold water, that the inhabitants of the island of Massuah cured the most violent bilious fevers. When applied in this way, it *gradually* abstracts the heat from the body, and thereby lessens the action of the system. It differs as much in its effects upon the body from the cold-bath as rest in a cold room differs from exercise in the cold open air.

"I was first led to the partial application of cold water to the body, in fevers of too much force in the arterial system, by observing its good effects in active hemorrhages, and by recollecting the effects of a partial application of warm water to the feet, in fevers of an opposite character. Cold water, when applied to the feet, as certainly reduces the pulse in force and frequency, as warm water applied in the same way produces contrary effects upon it. In an experiment which was made at my request by one of my pupils, by placing his feet in cold pump-water for a few minutes, the pulse was reduced twenty-four strokes in a minute, and became so weak as hardly to be perceptible."

In a disease that is so painful, pervading, and rapid in its progress, it would hardly be possible to do too much in the beginning, and before the prominent symptoms are effectually quelled. Long-continued shallow-bath frictions, affusions upon the head and body generally, clysters and tepid water-drinking, with the cooling wet-pack between times, if properly managed, make quick work in subduing all pains and uneasiness, and consequently give the patient the best possible chance.

CONTINUED FEVER.

Treatment—The treatment of continued fever is to be conducted on general principles. We are to employ ablutions, spongings, wet bandages, clysters, wet-packs, etc., according to the symptoms of the particular case, just as we would in any other form of fever, remembering always that we should treat the case as it is and not merely according to a name. The particulars of such treatment are more fully entered into under the head of "Typhus and Typhoid Fevers," to which the reader is referred.

Whenever a general feverishness, from whatever cause, is brought on in animals, they not only instinctively drink water, but immerse themselves in it, if it is possible for them to do so. It is said that in some countries wild pigs become violently convulsed by eating henbane, and that by going into water and by drinking it they recover. And when animals become feverish from mutilations or mechanical injury, they seek lying down upon the damp ground in the cool air and even in mud and wet, and go not infrequently into the water.

TYPHUS AND TYPHOID FEVER.

1. Envelop the patient in one or more heavy wet linen sheets, according to the heat and strength, the sheets not much wrung out

and to be frequently renewed, as often, at least, as they begin to grow dry. There must not be much covering over the sheets. In severe cases the patient should be kept in the wet-sheet the most of the time until the fever is broken up. As much fresh air as possible is to be admitted into the room. The sheet should always be doubled and wet towels applied to such parts as the armpits, between the limbs and wherever one part comes in contact with another.

2. The cold-bath is given three or four times in twenty-four hours and even oftener, should there be much heat. If the patient is very weak, the water is used mild, and this should be diminished from time to time until it can be borne moderately cold. The bath should, if possible, be administered to the patient in a reclining posture. At the same time the back of the head and neck should be bathed in water of the same temperature as the general bath, ending always with the water as cold as can be borne with comfort. The surface of the body should be rubbed constantly while the patient is being bathed and the bath continued until the temperature of the armpits is the same as the rest of the surface.

3. As the patient becomes able to take nourishment, give cold milk, fruit and farinaceous food in small quantities, always cold and at intervals of the usual meals. Great care is necessary in the food. Water at all times to be drunk according to the dictates of thirst.

4. Use the wet girdle all the time when the patient is not in the wet-sheet.

5. Injections or clysters of pure water are to be given if the bowels do not act naturally without; the water cold, if the patient is not very weak, one pint at a time.

The object of the whole treatment is to supply the body amply with coolness and moisture.

MILK-FEVER.

It is of great service, in every respect, for the patient to bathe three or four times a day at such a period. The more the fever is kept in check the better.

GOUT.

The wet-pack, prolonged shallow-baths and wet bandages are the means to be used. The practice should be continued as many hours or days in succession as may be necessary to quell the pain. It is far better to use cold, tepid and warm baths alternately; the wet-pack, frictions, bandages, etc., constantly; that is, to live in water than to endure the pain. Nor does water act by repelling the morbid matters from the surface, but by drawing them out. All spirituous liquors and a stimulating diet should be strictly prohibited. A strictly vegetarian diet in this disease is a necessity.

GRAVEL AND STONE.

The matter of the body should be changed as rapidly as possible for that which is pure and healthy, by the use of wet-packs, rubbing wet-sheets, sitting-bath, etc.

The wet-sheet pack, cold sitting-baths, the shallow-bath, rubbing the back with pieces of ice, frequent clysters to the bowels, etc.—all this will have a tendency not only to relieve the pain, but to stimulate the parts to expel the offending matters through the urinary channels.

The free use of pure, soft water and fruits, as a part of the regular meals, will be serviceable in preventing an increase in the size of the calculus, and the painful symptoms attending it. The warm-bath, as a palliative, is to be resorted to occasionally.

GONORRHEA AND GLEET.

Local wet compresses to the parts should be used unremittently; the wet sheet pack should, if possible, be used often; the diet should be strictly vegetable, and the whole management, both as regards the primary and the secondary symptoms, should be such as is best calculated to purify and invigorate the body generally. The hunger-cure is nowhere more applicable.

Gleet is to be managed on general principles; the system is to be purified and invigorated by baths, diet, etc., and the private member is to be kept constantly swathed in wet cloths.

HEADACHE.

Treatment—The head-bath, head-douche, and head-affusion are invaluable remedies here. Of course, if there is general fever, that must be attended to in the proper way. In a bilious fit the treatment recommended for a bilious attack elsewhere is indicated.

In almost any case of headache, in which the patient is able to be up, the sitz and foot-baths, cold, tepid, warm or hot, and followed by exercise, are highly serviceable.

HYSTERIA.

Treatment—The treatment of hysteria is divided properly into two heads; first, that which relates to the paroxysm; second, the means of preventing the attacks.

In severe cases care must be taken that the patient does not injure herself during the spasms. It would be easy for her to do harm with her hands and teeth if she were not properly looked after. No time should be lost in "cutting the corset strings," or at least in loosening the dress. The sooner, indeed, the clothing is removed the better, because the air, by its tonic effect, tends to remove the spasm. No matter how cold it is, the doors and win-

dows should be thrown open for a time. It will be soon enough to go for "comforts" after the spasm relaxes. If it seems necessary, the hands and arms should be confined. If the patient can be made to swallow, the sooner she gets a good dose of cold water the better. If it is at all practicable, she should at once be placed in the shallow-bath, or, what answers very well, a good-sized wash-tub, the feet being left outside, if the tub is not very large. If the patient is quite feeble, the water may be moderately warm, but afterward it is to be used colder. In the water she is to be rubbed with as many wet hands as can be brought to bear upon her body, limbs, hands and every other part. The sufferings of the patient are more apparent than real and there is no need of the sympathies of the attendants being so much excited as to interfere with the work on hand.

After the spasms become quelled, the patient should be placed in a folded wet sheet. This may appear uncomfortable to her at first; but, with the most mathematical certainty, it will soothe her system, and that too in a remarkable degree, if everything is managed as it should be. After the spasms are off, she should be made comfortable, and if the feet are cold they should be heated with hot bricks or other means.

One of the best means of producing a powerfully sedative and anti-spasmodic effect in these cases, is to pour cold water freely upon the head. With care that this is not continued after the spasm has abated there will be no danger of doing harm. Dr. Smee, a celebrated surgeon of London, who recommends this practice, says that he once saw cold water applied in this way for three hours, and the patient was quite well the next day. In some cases water should not be poured from a height; passive cooling only is what is needed, as a local application, in all affections of the head. A wash tub, instead of a bowl, should be used to receive the water, and we may use the same over and over again, if desirable; but it should not be allowed to get too warm.

In some cases the shallow-bath and the wash-tub can not be used; either they are not at hand, or the patient may be so unmanageable that she cannot be operated on in this way. We have, then, other and valuable resources—for hydropathy is not a one-remedy, as ignorant objectors have so often said. We have many and varied applications, and no two of them have precisely the same effects. But any one who understands the symptoms thoroughly, will never be at a loss as to what to do; he will be certain of doing at least some good, and no harm. In these supposed cases, then, the patient can be laid upon a bed, couch, cot, or the floor, even upon a blanket, or something of that sort, while at the same time she is powerfully rubbed with rubbing wet-sheets; these should be changed often, so as to keep the water as fresh as may be. Even wet-hand rubbing, wet-towel rubbing, and the like, are very good substitutes for the shallow-bath.

Another important measure in these cases should be particularly mentioned, to wit; clysters of cold water; these may be used freely, without stint. Cold cloths, placed upon the abdomen and genitals, are highly valuable. These things are mentioned for the encouragement of those who may not be able to have the better and more powerful means before explained.

HYDROPHOBIA.

In regard to removing the irritation of the throat, Dr. Hooper tells us that it has never been effectually fulfilled in any other way than by the use of ice taken internally. Here also the prolonged shallow-bath—that greatest of all hydropathic appliances—would be of signal benefit. Ice cannot be had in all situations and it is a satisfaction to know that in hydropathy there are various means of arriving at the same end.

In connection with the swallowing of ice, or the cold shallow-bath, whichever might be used, or both in connection, clysters of cold water, often repeated would be a serviceable means, not only to arrest the trouble at the throat but the nervous symptoms generally. If the patient should be very weak, tepid water could be used instead.

WHOOPIING-COUGH.

The treatment recommended for cough is applicable here. The wet jacket will be found peculiarly serviceable. Any tendency to general feverishness should be combated on general principles laid down elsewhere. As to what amount is to be given, the nature of the case should determine. One patient may need few baths a day, another many; and, in all cases, enough of the water-processes should be followed out to keep the general fever constantly in check.

INFLAMMATION OF THE KIDNEYS.

Treatment, from the beginning, should be of the most active kind. The great object is to subdue the fever and quell the pain. Cooling wet-packs, often repeated, cool sitting-baths, rubbing the whole back much with the hands wet in the coldest water, and with ice, are the means. The pain should, as far as possible, be kept subdued. The extremities should be kept warm. The warm or vapor-bath, alternating now and then with the cold treatment, is useful. But the great reliance is to be placed upon cold, pure, soft water, to be drunk frequently.

INFLAMMATION OF THE LUNGS.

According to the symptoms, we use the wet sheet pack, folded wet sheet, wet compresses, shallow baths and rubbing wet sheets,

or what is still better in most cases, the wet jacket. This is to be made of coarse linen and should fit the chest like a vest; and it is to be covered with a similar one made of woolen. The woolen one should have strings in front so as to fasten it snugly to the chest. Water should also be drunk freely, little and often, even if there is no thirst; care being taken that the system is not chilled. This can be best avoided by taking the chill off the water, or even drinking it hot. Clysters, too, are useful in the same way.

LARYNGITIS.

Locally, frequent garglings with tepid, or even warm water will be useful. The throat and chest should at the same time be often washed and rubbed with the hand wet in cold water. The stimulating compress is also useful about the throat. Steaming the throat is often of the greatest benefit.

INFLAMMATION OF THE BOWELS.

The disease is to be treated on the general principles of all severe inflammations. Keep down the fever, especially in the bowels; use half-baths or hip-baths, of temperature suited to the strength; wet sheets and compresses also come well in play; give injections—almost blood warm, again and again—if need be, fifty times in a day; keep the bowels completely ‘soaked;’ give no food till the disease is quelled, and then begin with half a teaspoonful portion; if this does well, double or treble the quantity the next time; but be very careful, or trouble will come from the food.

INFLAMMATION OF THE LIVER.

Treatment—Acute hepatitis is to be treated actively, like any other inflammation of an important organ. By wet sheet packs, shallow-baths, sitting-baths, compresses, etc., the pain and inflammation should be combated in the most vigorous manner. We should never cease or be satisfied till all pain and fever are completely checked. The abdomen is to be kept cool, and the feet warm. With this injunction it would be quite impossible for any one to do harm with cold water in this disease, so long as the pain and fever are not fully quelled.

INFLAMMATION OF THE MOUTH.

The great thing in the management of these inflammations is, the strictest cleanliness and attention to the general health. The stomach and liver are nearly always at fault when the mouth is inflamed, and the patient is to be treated accordingly. A good course of water treatment by wet packs, ablutions, the wet girdle, clysters, pure soft water and proper air, exercise and diet—these are the most appropriate and effectual means.

TONSILITIS.

Gargles are used with advantage in this disease, but there is nothing in the form of a wash that will be found better than pure, soft water. It will afford the patient great relief if he will often gargle his throat with tepid water, by the half hour at a time. In this way a great deal of tough phlegm will be removed from the throat and the soreness will be relieved in a corresponding degree. Washing and rubbing the throat and chest externally, with the hand wet in cold water, will also be found a good remedy. This may, with advantage, be repeated many times daily. Steaming the throat by holding the mouth open over the spout of a kettle of boiling water will often break up the attack, and will always relieve.

INFLAMMATION OF THE STOMACH.

Treatment—This should be similar to that for any other internal inflammation. The stomach also should be thoroughly cleared of its contents as soon as possible. The vomiting is to be kept down by the sedative effect of cold water generally; the more the fever is kept in check the less of this symptom there will be. Relapses in this disease are common from errors in diet.

INFLAMMATION OF THE BRAIN.

Having the patient's head projecting a little over the edge of the bed, supported by two persons holding at each end of a linen towel, for the head to rest upon, so that a large quantity of cold or tepid water can be poured upon the head and neck, to be caught in a tub or bucket below, is a good mode. At the same time wet towels are to be placed about the surface of the body, and changed as often as they become warm. These answer all the purposes of the wet sheet, and prevent the necessity of moving the patient, which it is better to avoid. Bladders of pounded ice, or pounded ice placed between wet linen cloths, laid not upon but near the head, are very useful.

INJURIES OF THE NERVES.

The water dressing is as favorable a remedy in the wounds of nerves as it is in other kinds of injury. Few other methods can at all compare with it.

INSANITY.

With reference to the use of water, in the cure of insanity, some facts of experience will prove instructive to the reader.

Dr. Currie gives a case in which the results of the method of employing it were highly satisfactory. The case was that of a man of very irregular habits of life, who was admitted into the asylum at Liverpool in a state of furious insanity. His disease was supposed

to have been brought on by excessive drinking. It was necessary to use very powerful means of coercion, and the most powerful medicines, opiates, cathartics, emetics, etc., were given. Dr. Currie commenced the case June 2d, and went on to the 21st of July, at which time he tells us that "perplexed with these extremes (the patient getting alternately better and worse, and bearing in mind the success of the cold bath in convulsive diseases), I ordered it to be tried on the present occasion. The insanity returning with great violence on the 21st, he was thrown headlong into the cold bath. He came out calm and nearly rational, and this interval of reason continued for twenty-four hours. The same practice was directed to be repeated as often as the state of insanity occurred." On the 23d the patient was again thrown into the cold bath in the height of his fury as before. As he came out he was thrown in again, and this was repeated five different times, till he could not leave the bath without assistance. He became perfectly calm and rational in the bath. "This patient," continues Dr. Currie, "continued with us sometime afterward, bathing every other day, and taking the oxide of zinc in small quantities. He never relapsed, and was discharged some time afterward in perfect health of body and mind."

Dr. Dunglison, in speaking of the cold douche as one of the very best tranquilizers that can be employed in cases of furious insanity, maintains that a column of water the size of the arm, or even much less, made to fall from a height on the head of the furious maniac, will almost always tame him. One of the most frantic cases that had ever fallen under his care was tranquilized by the column proceeding from the spout of an ordinary teapot, made to fall upon the head from the elevation of a few feet.

The cold dash, administered by pouring water on the head of the patient from some height, was used by Esquirol with entire success. The patient, a girl afflicted with mania, and of a nervous temperament, was placed—with a garment covering her—in a common wash-tub, and water was poured in small quantities on her head till it covered her body, and shivering ensued. On a second application of this method, which was for some time resisted, it was followed by a deep sleep, accompanied by copious sweating; and when the patient awoke she was found to have recovered her senses.

In the treatment of the insane, we should proceed on the same general principles as in any other case of bodily derangement. We are to use the rubbing wet sheet, the wet pack, the shallow bath, the affusion, the plunge, the wet-girdle, clysters, and, in short, the whole routine of the treatment, according to the nature of the case. This, I need hardly add, needs knowledge, skill, experience and good judgment in those who are to direct the treatment. In no department of the medical art are these more necessary than in this.

LOCK-JAW.

Dr. Watson recommends the cold-bath in this affection. He

remarks "that the application of cold water to the surface has, in many recorded instances, been of at least temporary benefit and comfort; and in the West Indies, where the disease is common, the cold affusion still continues to be the favorite expedient." Some have recommended for tetanus the use of ice upon the spine, a remedy which has been found eminently beneficial in convulsions. The ice should be applied by means of friction upon the naked skin up and down the spinal column and over the whole region of the back.

Various authors have recorded the beneficial effects of warm-baths in this disease. The Germans have in some cases used the warm-bath with success. In Holland it has been a custom to immerse the patient in warm baths of broth, in which he is kept for five or six hours, at the same time having opium administered to him. The warm-bath is doubtless a valuable remedy, but in some cases of the disease, much benefit cannot be expected from it. Used in alternation with the cold-bath, it is to be recommended. At the expense of repetition, I must here remark that the warm-bath must not be confounded with the hot, an error too often committed.

The great principle to be kept in mind in the treatment of this disease is, that tetanus is a spasmodic affection. The treatment, therefore, must be of an anti-spasmodic kind. The more powerful the remedy, the more effectual it will prove, provided it is not such as to injure or depress the vital force. Facts plainly prove that of all known anti-spasmodics, water is altogether the most powerful.

As to the methods of using it, due caution should be used. It is said, on the best authority, that patients have been killed by throwing two or three pailfuls of cold water over the body, almost as quickly as if they had been shot in the head. If a powerful measure is to be resorted to, it should be done when the paroxysm is at its height. Tepid or cold water is not likely to injure a patient under such circumstances. It is only when the patient is in the opposite extreme of the disease, that a cold application proves so dangerous.

Plunging the patient into cold water, douching and all applications that tend to shock the system, have often proved beneficial in quelling the tetanic paroxysm; but passive cooling—such as gives no severe shock to the system—is much safer and therefore to be preferred. The tepid shallow-bath, prolonged and with wet-hand friction, is to be highly recommended. It should be remembered, however, that as the disease varies from a very slight to a most severe and terrible one, so should the treatment be made to vary accordingly. If a poor sufferer is so bent up with cramp of all his voluntary muscles that he can only touch his head and heels to the bed, be assured it is no boy's play to treat his case. To bring down such spasms as make a man's muscles hard and stiff as a board, is to be accomplished only by the most energetic means. If we know how to manage the more severe cases, the lighter ones will be no difficult task.

NEURALGIA.

As a local application in this disease, ice and ice-cold water have been found to afford much relief. Steaming the part affected has been useful in some cases, and the hot douche—a remedy which can seldom be obtained—has been of service in subduing the pain. Dry heat, applied by means of a hot iron, or hot coals, held near the part as long as the patient can bear it, affords relief in some cases. Steaming the part with a hot brick or stone, with a wet cloth wrapped about it, has certainly done well in relieving rheumatic neuralgia of the back. Covering the part with oiled silk and cotton or wool, helps to keep off the attacks in some cases.

M. Gaudett, a French writer, asserts that facial and cranial neuralgia and hemicrania have, in his experience, yielded to no therapeutical remedy with the same facility as to sea-bathing, by immersion and affusion. The same writer holds also, that sciatica, even when occurring in debilitated subjects, and of long standing, yields to what he calls the tonic and sedative effects of sea-bathing. In all these cases it is the improvement of the general health that occasions the cure.

NIGHTMARE.

The treatment for this affection should be similar to that which we would adopt in night-pollution, sleep-walking, sleep-talking, etc., and which need not here be commented upon. It is of great importance that the patient lie upon his side. Nervous people are often fond of lying upon the back; and it is in this position that the nightmare attacks.

PALSY.

In recent cases from congestion of the spine either from injury or exposure, the treatment is to be conducted on the principles laid down for other inflammations. Fever is to be controlled by the wet-sheet pack, affusion, or full bath, and the spine may be kept constantly cool by a compress over the congested portion, which is to be determined by the portion of the body palsied. Rest is absolutely necessary in these cases to avoid serious and permanent injury to the spinal cord.

Paralysis from ænemia requires general tonic treatment, nourishing diet, plenty of air and judicious exercise, being careful not to overdo.

A cure of paralysis from spinal softening is not to be expected and great caution is necessary in such cases in the use of baths lest the disease be aggravated rather than benefited.

In all forms of palsy friction is a benefit and wet hand-rubbing is always to be preferred, since it is far more tonic than dry, and does not injure the skin. A wet towel or other cloth may be placed about the part—the arm, for example—and rubbing practiced over it.

PILES.

If the piles become strangulated—that is, if the bowel cannot be returned into the rectum—a cold hip-bath should be taken, so that the tumor may be reduced. Cold compresses are also useful.

Half a pint of cold water, injected into the rectum twice or thrice a day, and retained as long as possible, is a most effectual remedy.

SLEEPLESSNESS.

Sleeplessness is produced by either too much or not enough blood in the vessels of the brain. Tea, coffee, and other nervous stimulants when drunk late in the evening, and in some cases when used at all, tend to this disorder.

Before bedtime everything of a disturbing character should be dismissed from the mind, and when able, to walk in the open air before retiring will almost surely secure a good night's rest, provided the sleeping room is well ventilated.

If the sleeplessness is caused by a plethora of the blood vessels of the brain, a rubber bag containing ice may be hung at the head of the bed. This will keep the head cool without chilling the person if it is not placed too close to the head, and will thereby induce sleep; if on the contrary, anemia of the brain, or too little blood in that organ is the cause, the head should be lowered as much as possible to favor the circulation in that direction. Should the patient feel uncomfortable without a pillow, the feet may be raised higher than the head by placing something under the foot of the bedstead. According to a recent writer in a medical journal most cases of sleeplessness will be relieved by this latter procedure. It certainly deserves a trial.

Insulation of the bedstead, which may be done by placing a small piece of glass under the foot of each post, the bed to stand with its head to the north, has been found an admirable cure for sleeplessness.

SEA-SICKNESS.

I say to all, drink water freely from the first when you are sea-sick. Both man and animals can live more than twice as long with water as they can without it. Besides, it makes the vomiting easier. After one has had a little experience, he can tell well enough when the trouble is coming. If, then, when the qualmishness begins to affect him, he drinks two, three or more tumblerfuls of water—and blood-warm is best, though cold is useful—till he vomits, the effort is not only rendered much easier, but greater relief is obtained, and in a shorter time. The periods between vomiting will also be thus lengthened.

This water vomiting, then, I recommend as a great help in sea-sickness. To treat vomiting by vomiting, might seem paradoxical,

except to homeopaths. Of the good effects of the practice I can testify, not only from my own experience, but that of many others for whom I have prescribed.

The rubbing wet-sheet, and all hydropathic appliances which tend to bring the blood to the surface, will not only be found useful in warding off sea-sickness, but also in supporting the strength.

The wet-girdle is an excellent remedy in this affection. In some cases it wards it off entirely, and in others it serves as an efficient palliative. Priessnitz showed his rare shrewdness and knowledge of the laws that govern the human system, when he advised, as a remedy for sea-sickness, that a heavy wet-girdle, tightly applied, be worn constantly, and re-wet often, without removing it. Sailors know by experience that a girdle, even though dry, is useful; and we know, also, that a wet one is still better. In the convalescence from sea-sickness this remedy is particularly valuable.

ST. VITUS'S DANCE.

The rubbing wet-sheet and wet frictions generally are to be highly recommended for their anti-spasmodic and tonic effects. The wet-pack, properly managed, is valuable for its soothing effects. There is, in fact, no hydropathic process which cannot be brought to bear in this disease, as we find it in different cases. Dr. Wood, and various other authors, also mention the good effects of sea-bathing. It should be managed, of course, upon scientific principles, according to the nature of the case. As with other potent remedies, what might be valuable for one, would in the case of another produce only harm, and perhaps dangerous effects.

STRICTURE.

Water, if persevered in, is even more effectual than drug enemata; it leaves the bowels in a much better state and much less liable to future constipation. If there are concretions within reach in the lower bowel, they can sometimes be scooped out at once with the finger or a spoon-handle. Clysters of pure water, often repeated, aid the bowels in throwing off masses of this kind. In intussusception it is a sorry method to drug the stomach with cathartics, for by their action downward they tend inevitably to make the evil worse. Using very largely of clysters and at the same time cold applications to the surface to stimulate the movements of the bowels, will no doubt cure this formidable difficulty in some cases. The same also in twisting of the intestines.

SCROFULA.

The general treatment should be tonic and purifying, that, in short, which is best calculated to restore and preserve the general health. All of the hydropathic appliances come into play, according to the strength and power of endurance in the case.

The management of local parts is also to be conducted on general principles. In swellings we are to proceed according to the degree of heat. The same also is true of ulcers and the like. In general the stimulating compresses are the most appropriate, because the disease is seldom attended with high vascular excitement.

TRANCE.

Treatment—In these cases, as in hysteria, there is nothing that is at all comparable to water as a means of restoring the nervous power. The treatment should be similar to that for hysteria.

WARTS.

Warts often disappear while the patient is undergoing a course of water treatment. This happens in consequence of the purifying and stimulating effects of a hydropathic course. Wearing stimulating wet bandages upon warts, and washing the parts often with cold water, will not infrequently drive them off, even when other means have failed. Paring them, as a preparatory measure, is useful.

WORMS.

The case should be managed like one of dyspepsia. The strictest attention must be paid to the diet. The wet-girdle should be worn constantly, night and day, if the weather is not too hot. Sitting-baths, shallow-baths, and in short every thing that can be made to act favorably upon the system generally, is useful. Cold clysters are valuable; and if the worms should happen to lie within reach of the water, that is, in the rectum or colon, which is sometimes the case, the effects, if repeated two or three times daily, will be most excellent. Drinking freely of pure, soft water, when the stomach is empty, will also be a valuable means of helping to dislodge the animals from the beds of mucus in the abdomen.



A FULL BATH.

When to bathe and when not to bathe.

WHO SHOULD USE WARM, WHO TEPID AND WHO COLD WATER.

Proper Time for Bathing—Both health and life often involved in this matter.

The celebrated Dr. Gunn says: "BETTER LET WATER ALONE THAN TO USE IT IMPROPERLY." See page 424.



BATHING CHILDREN.

Methods of bathing that are fatal to health.

It is just as important to know when NOT to bathe as when to bathe a child.

It is vitally important, too, to know whether to use cold, warm or tepid water. See page 423.



HOME TURKISH BATH.

A Valuable Home Contrivance.

This simple arrangement, that can be constructed for a mere trifle, is worth many times the cost of this book in any family.

Takes the place of the popular cabinets that cost from \$5.00 to \$15.00. For its construction, see page 420.

It is a simple but effective means of eliminating poisons from the system.

DIVISION ELEVENTH.

HOMEOPATHY.

BY W. E. REED, M. D., EDITOR OF *The Medical Current*.

INTRODUCTORY RULES.

To those unacquainted with the homeopathic system of medicine, a few words of explanation will not be out of place. The theory or law of homeopathic prescribing is founded on the principle "*Similia Similibus Curantur*" (like cures like); or in other words, a medicine that will produce in the healthy, when given in material doses, certain symptoms, will cure those or similar symptoms produced by some other cause in the sick. Opium produces constipation when taken by a person in health, and will cure a similar condition when produced by disease; but it will cure only a similar condition to that produced by the drug. It will not cure every case of constipation, and will not cure the condition caused by the drug itself. Hence the necessity of making a careful selection of the remedy, and when this is done, the results are most certain to be satisfactory.

Selecting the Remedy—As homeopaths never prescribe for diseases by names, and only by symptoms, the selection of the remedy becomes more difficult than it otherwise would be, if one were to say such a remedy is good for such a disease; but there are a few general rules which may be of aid. The premonitory symptom of all acute fevers is a chill, and of many conditions of inflammation also. Aconite stands nearest to the specific for this condition, and where there is a chill, it is safe to begin the treatment with Aconite. If the disease progresses and is not arrested by the Aconite, and becomes defined, then seek the remedy among those under the heading of whatever symptom the disease develops. With the exception of scarlet fever, this rule holds good. In this disease Belladonna will be the nearest to the specific and will correspond to the *throat symptoms* more closely. Belladonna will act as a preventive during epidemics.

It is safe to begin the treatment of all acute diseases with Aconite. Relief should follow in twelve hours at the most.

Study Symptoms Carefully—During this time, if the symptoms point to any disease, study the indications for the rem-

edies carefully; compare them with the patient's symptoms, and *select that one which corresponds most closely to the patient's symptoms*; this will be the homeopathic remedy. Give it with confidence; *allow it time to act*, and the result will be very gratifying. This treatise is arranged as far as possible with the view of brevity and clearness, and only such indications are given as are *striking* or *characteristic*, and particular attention is called to symptoms where *italics* are used, these being characteristic symptoms of the remedy, and it is from these symptoms that the remedy is to be particularly selected.

A careful perusal, now and then, when not needed in sickness, will render the method familiar to all, and this we would recommend. If the disease progresses and the symptoms become alarming, send for the best homeopathic physician, and tell him what you have been giving.

REMEDIES, DOSE, ETC.

Procure your remedies of a reputable homeopathic pharmacist, or those prepared by some reputable pharmacist, in the *Sixth Dilution*. A tincture means the strongest preparation and is not safe to use. If pellets are preferred, No. 35 or 40 saturated with the Sixth Dilution.

DOSE. If of the dilution, four drops in four tablespoonfuls of water; of this take two teaspoonfuls at a dose. Of the pellets take four. The frequency of the dose will depend on the condition of suffering. In acute pain the remedy should be given as often as every thirty minutes, always lengthening the interval between doses as improvement advances. In ordinary fever, coughs, colds, etc., every two or three hours; in chronic cases one dose per day. Medicine should be given half an hour before eating, or an hour after.

Glasses and spoons should be perfectly clean and should never be used for more than one medicine without having been thoroughly cleansed. Do not change corks from one bottle to another and never return powder or pellets to vial after handling them.

DIET.

Avoid highly seasoned food, condiments, coffee, tobacco and alcoholic stimulants, pastry, fats and oils and confectionery. Use beef and mutton, and when the patient can digest it, beef and mutton fat. When solid food cannot be taken, mutton broth, cooled and all the fat skimmed off, will be perhaps the best. Gruels made from rice, farina, oatmeal, barley or wheat flour may be taken.

Of the artificial foods Murdock's Liquid food and Bovine for animal foods; Mellin's, Horlicks, and the Wells, Richardson Co.'s Lactated Foods, for farinaceous food. For drinks, water, weak black tea, mucilaginous drinks such as gum arabic water, etc.

HOMEOPATHIC GLOSSARY.

ABBREVIATIONS.

Aconite Napellus.....	Acon.
Antimonium Crudum.....	Ant. Crud.
Arsenicum Album.....	Arsen.
Apis Mellifica.....	Apis
Arnica Montana.....	Arn.
Baryta Carbonica.....	Baryta Carb.
Belladonna.....	Bell.
Borax Venene.....	Borax.
Bromium.....	Bromim.
Bryonia Alba.....	Bry.
Cactus Grandiflorus.....	Cact. Grand.
Calcarea Carbonica.....	Calc. Carb.
Camphor.....	Camph.
Capsicum.....	Caps.
Carbo Vegetabilis.....	Carbo Veg.
Causticum.....	Caust.
Chamomilla.....	Cham.
China Officinalis.....	China.
Cina.....	Cina.
Croton Tiglium.....	Crot. Tig.
Coffee Cruda.....	Coff.
Colocynth.....	Coloc.
Cuprum.....	Cap.
Dulcamara.....	Dulc.
Drosera.....	Dros.
Gelsemium Semp.....	Gels.
Glonoine.....	Glon.
Graphites.....	Graph.
Helleborus.....	Hell.
Hyoseyamus.....	Hyos.
Hepar Sulph.....	Hepar.
Ipecacuanha.....	Ipec.
Ignatia.....	Ignat.
Kali Bichromium.....	Kali Bi.
Kali Nitricum.....	Kali Nit.
Lachesis.....	Lach.
Lycopodium.....	Lye.
Mercurius Protoiodide.....	Merc. Proto.
Mercurius Corrosivus.....	Merc. Sol.
Nux Vomica.....	Nux Vom.
Natum Muriaticum.....	Natr. Mur.
Nitric Acid.....	Nitr. Ac.
Opium.....	Opi.
Phosphorus.....	Phos.
Platina Metallicum.....	Plat.
Pulsatilla.....	Puls.
Podophyllum.....	Pod.
Rhus Toxicodendron.....	Rhus Tox
Rheum.....	Rheum.
Sabina.....	Sabina.
Secale Cornutum.....	Secale.
Sepia.....	Sep.
Stannum.....	Stann.
Spigella.....	Spig.
Spongia Tasta.....	Spong.
Silicea.....	Sil.
Stramonium.....	Stram.
Sulphur.....	Sulph.
Tartar Emetic.....	Tart. Em.
Veratrum Album.....	Verat. Alb.
Zingiber.....	Zing.

ABSCESSSES, BOILS.

When the patient presents the following symptoms: Redness, swelling, heat with great nervous excitement; restless, *anxious feeling*, worse in evening and during night; give ACONITE.

Violent *burning* pain: *great debility*; threatens to become gangrenous; worse during rest; thirst for small quantity, but frequent drinking—ARSENICUM.

The tumor is hard, swollen, with *throbbing* pains, worse in afternoon; pains appear suddenly and leave suddenly—BELLADONNA.

Suppuration is inevitable; throbbing pains, with chills; scrofulous persons—HEPAR SULPH.

Where pus has formed; if poisonous matter has been introduced into the system; parts assume a *purplish* hue; gangrene, worse after sleep—LACHESIS.

Glandular abscesses; promotes discharge after suppuration has taken place—MERC. SOL. or VIVUS.

Suppuration is imminent; discharge becomes thin and watery; does not heal—SILICEA.

Inveterate cases, profuse discharge with emaciation; scrofulous persons who are frequently troubled with boils—SULPHUR.

For repetition of dose, see page 456.

APOPLEXY.

When the patient presents the following symptoms: Plethoric habit. Head hot, throbbing, redness of face; give ACONITE.

Face dark red; veins distended, face and neck; throbbing of temporal arteries; drowsiness; loss of consciousness—BELLADONNA.

Giddiness; tendency to staggers; dimness of vision; nervous exhaustion—GELSEMIUM.

Sudden falling down; constriction at throat, *twitching and jerking of all muscles of body*—HYOSCYAMUS.

Sedentary habits; high living; paroxysms preceded by vertigo, worse in morning—NUX VOMICA.

Redness, bloatedness and heat of face; patient lies in state of unconsciousness with half open eyes; *snoring respiration*; convulsive motions of extremities—OPIUM.

For repetition of dose, see page 456.

ASTHMA.

When the patient presents the following symptoms: Great fear and anxiety of mind, with dry, croaking cough, and constriction of windpipe; aggravation from dry cold winds; give ACONITE.

Attacks of suffocation, especially at night; *great restlessness and fear of death*, worse lying down; *better from warmth*, worse about 1, a. m.—ARSENICUM.

Asthma of sailors as soon as they go ashore; constriction of chest with difficulty of breathing; *must sit up in bed*; spasmodic air passages, feel as if full of smoke—BROMIUM.

Better from lying perfectly quiet; dry cough; stitches in chest; sitting up in bed causes nausea and fainting—BRYONIA.

Nausea; rattling in bronchial tubes, but no expectoration—IPECAC.

Coldness of surface, with clammy perspiration; rattling in bronchial tubes—TARTAR EMETIC.

For repetition of dose, see page 456.

BRONCHITIS.

When the patient presents the following symptoms: In the beginning chill, dry, hot skin; *great restlessness*; short dry cough, worse at night and after exposure to dry, cold winds; thirst; give ACONITE.

Face flushed, eyes red; fullness in head; spasmodic cough which does not allow one to breathe; children cry after coughing; sleepy but cannot sleep; starting in sleep—BELLADONNA.

Dry cough with stitches in chest (follows well after Aconite); *sensation when coughing as if head and chest would fly to pieces*; *better by remaining perfectly quiet*—BRYONIA.

Hoarseness, particularly in the evening; burning in the chest like hot coals; cough with discharge of yellow pus—CARBO VEGETABILIS.

Hoarseness morning and evening; when coughing, pain over the hip; *involuntary emission of urine while coughing*—CAUSTICUM.

Suffocating cough with difficulty of breathing; rattling of mucus in bronchial tubes; nausea and vomiting of mucus—IPECAC.

Catarrh of whole mucous membrane, nose to chest; cough worse at night; perspiration without relief—MERCURIUS.

After previous use of cough mixtures; nose stopped up, cough with headache (Bry.); fever, with chilliness from the slightest motion; dry cough from midnight until morning—NUX VOMICA.

Complete loss of voice; *tightness across chest*; aggravation from talking; cough, with expectoration of rust-colored mucus; feeling of weight on chest—PHOSPHORUS.

Dry cough at night, better from sitting up in bed; loose cough with profuse expectoration of yellow or green mucus; chilliness in warm room—PULSATILLA.

Great dryness in throat, with hoarse, hollow, wheezing cough; sawing respiration (croupy subjects)—SPONGIA.

Chronic form—hoarseness, loss of voice; frequent weak, faint spells—SULPHUR.

Large collection of mucus in bronchial tubes, but none is expectorated; cold, clammy perspiration—TARTAR EMETIC.

Hollow cough as if proceeding from abdomen or lower part of chest; rattling of mucus in chest; thirst; prostration; diarrhea—**VERATRUM ALB.**

For repetition of dose, see page 456.

CATARRH, OR COLD IN THE HEAD.

When the patient presents the following symptoms: Dry, with stoppage of the nose; *Acon.*, *Bry.*, *Nux Vom.* Fluent with watery or mucous discharge; give **ALLIUM CEPA. ARSENICUM, MUSC. PULS.**

First stage; chilliness, with heat in head and face; from dry, cold winds—**ACONITE.**

Profuse discharge of water from eyes, with burning excoriating discharge from nose; violent sneezing, better in fresh air; cough hurts the throat—**ALLIUM CEPA.**

Frequent sneezing with profuse fluent discharge and stoppage of the nose; burning in nose; *better from warmth*—**ARSENICUM.**

Sore throat, hoarseness, dry cough; dryness of throat; children cry when coughing; headache—**BELLADONNA.**

Frequent sneezing and profuse watery discharge; *ulcerated tonsils*; cough worse at night; after perspiring cold is no better—**MERCURIUS.**

Fluent during day; stoppage of nose at night; headache, irritable; snuffles of infants—**NUX VOMICA.**

Discharge of yellowish-green thick mucus; *loss of taste and smell*; worse in a warm room, better in open air—**PULSATILLA.**

For repetition of dose, see page 456.

CHOLERA MORBUS.

When the patient presents the following symptoms: Violent attacks with great prostration; great restlessness; burning in stomach; nausea and vomiting, especially after eating and drinking; give **ARSENICUM.**

Frequent vomiting—food, sour or bitter substances; cutting pains in abdomen; *patient very irritable; children want to be carried all the time*—**CHAMOMILLA.**

Attacks in the night, painless discharges, abdomen bloated; weakly persons after losing much blood or fluids—**CHINA.**

Violent cramp-like pain in region of navel, relieved by bending double or pressing against the part—**COLOCYNTH.**

Vomiting; *constant nausea*; stools *sour, green as grass*, after eating unripe fruit—**IPECAC.**

Occurs in hot weather; stools profuse, gushing; restless sleep, half-closed eyes—**PODOPHYLLUM.**

After eating fat, rich food, stools greenish, bilious, watery; worse at night, feels better in a cool place—**PULSATILLA.**

Violent nausea and vomiting attended with profuse watery diarrhea, and severe pinching colic; great thirst for cold drinks;

countenance pale or bluish with cold sweat on forehead ; pulse frequent and weak—**VERATRUM ALB.**

For repetition of dose, see page 456 .

CHOLERA INFANTUM.

(See Cholera Morbus).

COLIC.

When the patient presents the following symptoms : Clutching in the abdomen as if seized with claws ; external pressure and bending double relieves ; pains come and go suddenly ; give **BELLADONNA**.

Flatulent colic ; rumbling in bowels ; belching rancid food—**CARBO VEGETABILIS**.

Flatulent colic ; abdomen distended like a drum ; very impatient, cross, children want to be carried—**CHAMOMILLA**.

Violent cutting constrictive pains ; *feeling in abdomen as if intestines were being squeezed between stones, relieved by bending up double*—**COLOCYNTH**.

After unripe sour fruit, nausea and inclination to vomit ; cutting and pinching in abdomen—**IPECAC**.

Pressure in stomach as from a stone ; high livers, colic from indigestion—**NUX VOMICA**.

After rich greasy food—**PULSATILLA**.

Pain in abdomen as if cut with knives ; *violent nausea and vomiting* ; coldness of surface of body. Give the patient copious draughts of hot water, apply dry heat to extremities—**VERATRUM ALB.**

For repetition of dose, see page 456 .

CHICKEN POX (*Varicella*).

If there is much fever, give **ACONITE**.

Disturbance, of brain, sleepless—**BELLADONNA**.

In the eruptive stage—**TARTAR EMETIC**.

CONSTIPATION.

If the patient presents the following symptoms ; Great inactivity of lower bowel with dryness, much straining and pressing to pass even soft stool ; give **ALUMINA**.

Hard, dry stools as if burned ; headache as if skull would split—**BRYONIA**.

Stools large, hard, partly digested ; constipation of children—**CALCARIA CARBONICA**.

Constipation with rush of blood to the head ; *frequent urging to stool without effect* ; high livers and abuse of drugs—**NUX VOMICA**.

Torpor of bowels; *stools small, hard, black balls like sheep's dung*; constipation from fright or fear—**OPIUM**.

Stool recedes back into rectum after having partly passed; difficulty of expulsion; infants and scrofulous children—**SILICEA**.

For repetition of dose, see page 456.

COUGH.

DRY COUGH—**Acon.**, **Bell. Bry.**, **Nux Vom.**, **Phos.**

Loose—**Dulcanara**, **Pulsatilla**.

Where there is short dry cough, worse at night, plethoric habit; induced by cold west (dry) wind; beginning of cold; give **ACONITE**.

Dry cough as if caused by smoke of sulphur, with sense of suffocation; restlessness; worse about 1 A. M.—**ARSENICUM**.

Dry spasmodic cough; wakes from sleep; *sensation of dust in throat*; redness and heat of face, throbbing headache—**BELLADONNA**.

Dry cough with stitches in chest, compelling patient to hold chest with hands; sensation as if head and chest would fly to pieces when coughing—**BRYONIA**.

Dry spasmodic cough in children troubled with worms; cough with gagging; constantly picking and boring at nose; useful in whooping cough—**CINA**.

Croupy cough; dry hoarse cough; worse in morning; *worse from uncovering even a hand*—**HEPAR SULPH**.

Dry spasmodic cough when lying down, *relieved by sitting up*; twitching of muscles—**HYOSCYAMUS**.

Suffocating cough, with *rattling of mucus in bronchial tubes when breathing*; much nausea—**IPECAC**.

Cough with *stringy expectoration*—**KALI BICHROMIUM**.

Cough worse at night and in damp, rainy weather; perspiration without relief; sounds as if whole inside of chest were dry—**MERCURIUS**.

Dry cough, with pain in head as if skull would burst, with *bruised feeling in region of stomach*; constipation, after abuse of cough mixtures—**NUX VOMICA**.

Dry tickling cough *with tightness across chest*; worse from talking, reading aloud, laughing or drinking; hoarseness—**PHOSPHORUS**.

Dry cough at night *going off when sitting up in bed*; (Hyos); or morning cough with profuse expectoration of yellowish or greenish mucus; all the symptoms worse toward evening—**PULSATILLA**.

Loose cough without expectoration; nausea and vomiting of mucus—**TARTAR EMETIC**.

Deep hollow cough from tickling low down in bronchial tubes; violent cough with blueness of face and involuntary urination (Caust.); great weakness; whooping cough—**VERATRUM ALB**.

For repetition of dose, see page 456.

CROUP.

When the patient presents the following symptoms, *inflammatory feverish, dry, hot skin*; great restlessness; hoarse barking cough; on attempting to swallow, child cries from pain in throat—**ACONITE**.

Give until cough loosens, and then follow with Hepar. Sulph., if cough is hoarse, hacking or loose, rattling and shaking, with *aggravation from getting uncovered*; or Spongia if there is wheezing, sawing respiration; the stridulous sound is heard during inspiration and the cough during expiration.

Blue eyes, light hair; great difficulty of breathing; child gasps for air, spasm of larynx, dry, hoarse, spasmodic cough—**BROMIUM**.

Dark hair and eyes; soreness and pain in chest and throat; which child manifests by grasping with hand (Acon.); dry, short, barking cough—**IODINE**.

Membranous croup; the air as it passes through the throat sounds as if passing through a metallic tube; violent wheezing and rattling—**KALI BICHROMIUM ZINC**.

Face cold, bluish, with every cough; sounds as if chest were full of mucus, but none comes up; prostrated—**TARTAR EMETIC**.

For repetition of dose, see page 456.

MILK CRUST.

Where the following symptoms are present: Scrofulous children; eruption moist with falling off of hair; give **BARYTA CARB**.

The eruption has a raw appearance and discharges a *sticky glutinous fluid*; *rawness of bends of limbs, neck, and behind ears*—**GRAPHITES**.

Moist scurfy eruptions; pale, flabby bodies; perspires on head—**CALC. CARBONICA**.

The child has a dry, unhealthy skin; *does not like to be washed*—**SULPHUR**.

For repetition of dose, see page 456.

INFLAMMATION OF BLADDER.

Dry hot skin, intense thirst, frequent and violent urging to urinate, retention of urine; great restlessness and anxiety; give **ACONITE**.

Region of bladder very sensitive; *urine hot and red*; pains come on suddenly and cease suddenly—**BELLADONNA**.

Violent pains and burning in bladder; burning and cutting during urination; bloody urine—**CANTHARIS**.

Ineffectual desire to urinate; persons of sedentary habits; abuse of alcoholic stimulants—**NUX VOMICA**.

Warm sitz baths, cloths wrung out of hot water applied to region of bladder.

For repetition of dose, see page 456.

DENTITION (Teething).

Where the patient presents the following symptoms: Constant restlessness, thirst, dry, hot skin; give ACONITE.

Gums swollen and inflamed; convulsions; *wakes from sleep as in a fright*; moaning in sleep; hot head—BELLADONNA.

Child nervous; *cannot bear a downward motion*; sore mouth, *causing child to cry when nursing*—BORAX.

Large head; *perspires on head*; teeth slow in coming; white chalk-like stools; vomits milk in thick curds—CALCAREA CARB.

Irritable and sensitive; wants to be carried all the time; starting and crying out (Bell.); one cheek red, other pale; diarrhea with greenish, yellowish or whitish mucous stools—CHAMOMILLA.

Child very excitable, sleepless—COFFEE.

During dentition, *sour smelling diarrhea*; colic before stool and urging after, sour smell of whole body; twitching during sleep—RHEUM.

For repetition of dose, see page 456.

DIARRHEA.

Acute with great prostration—ARSENICUM, CAMPHOR, SECALE CORNUTUM, VERATRUM ALB.

Chronic form—ARSENICUM, CALCAREA CARB, PODOPHYLLUM, SULPHUR.

When caused by cold drinks—ARSEN. BRY. PULSATILLA.

Taking drugs—NUX VOMICA.

Eating fat food—PULSATILLA.

“ unripe fruit—IPECAC.

“ milk—CALCAREA CARB.

“ veal—KALI NITRICUM.

Caused by fright—ACON., OPIUM.

“ “ grief—GELS., COLOCYNTH, IGNAT.

“ “ joy—COFFEE.

“ “ impure water—ZINGIBER.

“ “ getting wet—RHUS. TOX.

Painless diarrhea—CHINA., HYOS., POD.

When the patient presents the following symptoms: Stools thick, dark green, mucous, or black and watery, with burning at the anus; great weakness and restlessness; worse from cold food or drink—ARSENICUM.

Or, diarrhea worse when weather changes from cold to warm; *worse in morning* (Podoph.) and from moving about, after suppressed eruptions—give BRYONIA.

Diarrhea of scrofulous persons; stools whitish or watery; profuse sweat on head; (children when teething); sour vomiting—CALCAREA CARBONICA.

Stools green, watery, preceded by colic, *smelling like rotten eggs*; *children are very fretful*; *can only be quieted by*

being carried about; one cheek flushed the other pale—CHAMOMILLA.

Stools *yellowish, watery, whitish or black*, painless, undigested, with distended abdomen—CHINA.

Stools white, child picks at the nose, restless sleep—CINA.

Stools *saffron yellow, fatty, stringy and watery* with discharge of flatus; pain in abdomen as if intestines were *being squeezed between stones*—COLOCYNTH.

Stools yellow watery or greenish yellow, *expelled with great force all at once*; aggravation after drinking, while eating—CROTON TIGLIUM.

Diarrhea induced by sudden fright, grief or bad news—GELSEMIUM.

Painless, yellow, watery, *involuntary* stools; during typhoid fever; aggravated from mental emotions—HYOSCYAMUS.

Stools *grass green*, sour, fermented, *nausea* and colic; paleness of face, cold extremities—IPECAC.

Stools *dark green, slimy or bloody, with urging after stool, never get done, feeling worse at night* and in warm weather; sore mouth with increased flow of saliva—MERCURIUS.

Diarrhea worse in morning and after taking *mixtures*; small brown mucous stools—NUX VOMICA.

Painless diarrhea, always worse in the morning and in hot weather; profuse watery bilious stools—PODOPHYLLUM.

Stools green, brown, fermented; *sour smelling of children; whole body smells sour*; urging after stool—RHEUM.

Early morning diarrhea driving patient out of bed at 5 A. M. without pain; after suppressed eruptions—SULPHUR.

Profuse watery, blackish, greenish stools; severe pinching colic, causing cold sweat to stand on forehead; great exhaustion after stool; great thirst for cold water—VERATRUM ALBUM.

For repetition of dose, see page 456.

DIPHTHERIA.

Great dryness of throat, tonsils bright red, great difficulty of swallowing, very restless and drowsy but cannot sleep; *throat feels worse on right side*; before deposit of membrane—BELLADONNA; give every hour.

If membrane appears on right tonsil and throat has brownish red appearance, with nose stopped up; pain in throat when swallowing; the nostrils dilate with every breath; with red sandy sediment in the urine; worse from 4 to 8 P. M.; goes from right over to left side—LYCOPODIUM.

Disease appears on the left side, and during attempt to swallow liquids there is more suffering than from swallowing solids, and the pain extends into the left ear; feels worse after sleeping and cannot bear anything to touch outside of the throat; dis-

charge from mouth and nose has a putrid smell; goes from the left side over to right side—*LACHESIS*.

Hoarse, croupy cough, with *expectoration of stringy mucus*; dirty yellow deposit on back part of throat—*KALI BICHROMIUM*.

Great difficulty of swallowing; violent aching in back and extremities; sensation as if swallowing an apple core; dark color of throat—*PHYTOLACCA*.

Yellow coating on back part of tongue; swelling of glands under the jaw; deposit covers the whole of throat and palate—*MERCURIUS PROTOIODIDE*.

For repetition of dose, see page 456.

Do not trust too long to domestic treatment in this disease, procure the services of a good homeopathic physician. As a local application, alcohol diluted with one-half its volume of water for an adult, and two-thirds ($\frac{2}{3}$) for a child may be used as a gargle or spray, as can be best applied. The diet should be nourishing; good fresh milk, mutton broth and eggs are the best articles of diet.

DYSENTERY.

In the beginning, and when the days are warm and nights cool with general fever and restlessness, thirst and anxiety—give *ACONITE*.

Stools dark, black, mixed with blood; putrid foul smelling; involuntary with intense burning in rectum; *thirst for little and often*; worse after drinking; rapid prostration—*ARSENICUM ALB.*

Stools greenish, slimy, bloody; great pain during and after stool; *pains in abdomen coming suddenly and going suddenly*; starting and jumping during sleep; *dry mouth and throat with little sleep*—*BELLADONNA*.

Disease caused by getting over-heated and taking cold drinks when system was very warm; *patient wants to keep perfectly quiet; drinks large quantities but not very often*—*BRYONIA*.

Stools look like scrapings of the intestines; painful urination—*CANTHARIS*.

Stools bloody, mucous; *chilliness after drinking*; urging after stool great—*CAPSICUM*.

Stool bloody, mucous; *violent colicky pain around navel causing patient to bend double*; relief after evacuation; worse after a meal; from fruit—*COLOCYNTH*.

Stools *pure blood or bloody mucus*; during stool painful straining; pain in bladder with scanty urine—give *MERCURIUS CORROSIVUS*.

Constant *urging to stool though little passes*; relief of pains after stool; persons of intemperate habits or after taking mixtures for diarrhea—*NUX VOMICA*.

Stools reddish, mucous; worse from having gotten wet; *relief from walking about*—*RHUS TOX*.

Boil the water for the patient to drink and allow it to cool.

For repetition of dose, see page 456.

DIFFICULT MENSTRUATION.

Pain precedes the flow, with congestion to the head; redness of face; bearing down pains; discharge hot; bright red—give **BELLADONNA**.

Scrofulous patients, menses have delayed; swelling and tenderness of breasts—**CALCAREA CARBONICA**.

Labor like pains in womb, patient irritable, cannot stand the pain—**CHAMOMILLA**.

Light hair, blue eye, delayed menses, dark flow, flows and then stops, chilliness, tearful and beside herself with pain—**PULSATILLA**.

Colicky pains, great bearing down as if everything would protrude, *dark hair and eyes*—**SEPIA**.

For repetition of dose, see page 456.

DYSPEPSIA (Indigestion).

In disease caused by overloading stomach, white tongue; alternate constipation and diarrhea; give **ANTIMONIUM CRUDUM**.

Derangement from ice-cream, fruits; *burning in stomach*—**ARSENICUM**.

Throws up food immediately after eating; bitter taste; irritable; constipated; headache—**BRYONIA ALBA**.

Sour vomiting; aversion to meat (Caust.); desire for dainties—**CALCAREA CARB.**

Sour rancid belchings; stomach and bowels full of gas; the simplest food disagrees—**CARBO. VEGETABILIS**.

Complete loss of appetite; debility; fermentation in stomach and bowels; food passes undigested—**CHINA**.

The least food gives a fullness of having eaten a hearty meal; rumbling and rolling in bowels, particularly in left side—**LYCOPodium**.

After highly seasoned food; region of stomach sensitive to pressure; pain in stomach after every meal; constipation; wakes at 3 A. M. every morning—**NUX VOMICA**.

Tongue coated white; bad taste in the mouth in morning; cannot eat fat food or pastry; diarrhea at night—**PULSATILLA**.

For repetition of dose, see page 456.

ECZEMA (Eruption on Skin).

Scrofulous children; eruption moist or dry; unhealthy skin; thick crusts burning and itching; chronic form—**CALCAREA CARB.**

Eczema with oozing of sticky glutinous fluid; rawness in bends of elbows, knees and under the arms and back of the ears—**GRAPHITES**.

Eruption spreading by means of new pimples appearing just beyond old ones; lean persons; skin does not heal readily—**HEPAR SULPH.**

Scrofulous subjects; dry, scaly, unhealthy skin; itching worse at night; eruption worse from scratching—SULPHUR.

For repetition of dose, see page 456.

ERYSIPELAS.

In Erysipelas of face with burning *stinging* pains, with swelling of eyelids, give APIS MEL.

Smooth, red, shining; facial erysipelas, with congestion in head; headache—BELLADONNA.

Parts become covered with watery vesicles; better from warmth and motion—RHUS TOX.

For repetition of dose, see page 456.

INFLAMMATION OF STOMACH.

Feverish, with hot, dry skin; restlessness; vomiting blood; sharp pains in stomach—ACONITE.

Intense *burning in stomach*; vomiting everything eaten or drunk; thirst, but drinks little at a time; rapid prostration—ARSENICUM.

Region of stomach very sensitive, cannot bear the least pressure; must remain perfectly quiet; vomiting everything eaten or drunk (Arsen.), with *great thirst for large quantities, but not very often; hard dry stools*—BRYONIA.

The simplest food disagrees; vomiting food or water or bloody masses; great prostration, coldness of surface; putrid stools—CARBO. VEG.

When nausea and vomiting prevail, and after eating sour or unripe fruit—IPECAC.

Victims of strong doses of nostrums; constipation with frequent urging to stool—NUX VOMICA.

Nausea and vomiting with frequent faint spells, wants fresh cool air; constant spitting of frothy mucus—PULSATILLA.

For repetition of dose, see page 456.

HEMORRHAGE FROM THE BLADDER.

When caused by mechanical injuries, give ARNICA.

Constant desire to urinate, with only a few drops of bloody burning urine passing; worse from drinking water—CANTHARIS.

Urging to urinate, must wait long before it will pass; red sand in urine; in persons subject to gravel—LYCOPODIUM.

Young girls from suppressed menses—PULSATILLA.

For repetition of dose, see page 456.

HEMORRHAGE FROM LUNGS.

Great anxiety of mind with fulness in chest; bright red hemorrhage—ACONITE.

After mechanical injury or great bodily exertion—ARNICA.

FALLING OF WOMB.

Congestion to head and chest, blood bright; red face—**BELLADONNA**.

After loss of much blood; ringing in ears; fainting, etc.—**CHINA**.

Copious bleeding associated with feeling of *great nausea at stomach*—**IPECAC**.

For repetition of dose, see page 456.

FALLING OF WOMB.

If caused by mechanical injury with sore, bruised feeling; give **ARNICA**.

Flabby state of body; menses too frequent; uterus easily displaced—**CALC. CARB.**

Pressure in small of back as from a stone; menses too late, scanty, thick, black, clotted; bad taste in mouth in morning; light hair, blue eyes—**PULSATILLA**.

Bearing down as if everything would protrude; yellow complexion, dark hair and eyes; greenish yellow discharge—**SEPIA**.

For repetition of dose, see page 456.

HEADACHE.

Head feels as if it would burst; intense throbbing, with intolerance of light and noise; face red; worse while lying down; give **BELLADONNA**.

Headache begins on waking in the morning; head feels as if it would split; worse from motion; patient irritable—**BRYONIA**.

Top of head feels as if it would fly off; rheumatic and menstrual headaches—**CIMICIFUGA**.

Great sensitiveness of all the senses; headache as if a nail were driven into the brain; extreme wakefulness; head feels as if it would fly to pieces; nervous headaches—**COFFEE**.

Headache from suppressed grief; pain relieved by lying down; nervous hysterical feelings—**IGNATIA**.

Nausea and vomiting the most prominent symptoms—**IPECAC**.

Headache worse in morning; worse from *mental exertion*; persons of intemperate or sedentary habits—**NUX VOMICA**.

Headache from eating greasy fat food; bad taste in mouth in morning; with menstrual ailments; in persons with light complexion, blue eyes—**PULSATILLA**.

For repetition of dose, see page 456.

HEART PALPITATION.

After a fright the heart beats quick and strong, with an anxious feeling in the chest; give **ACONITE**.

After great exertion—**ARNICA**.

Violent palpitation, with congestion of the head—**BELLADONNA**.

Palpitation, with great weakness, cold hands, after loss of fluids—CHINA.

Violent palpitation, after great excitement, laughing, etc; sleepless—COFFEE.

After coffee, wine or spirits—NUX VOMICA.

After fright—OPIUM.

Young girls from suppressed menses and at puberty—PULSATILLA.

For repetition of dose, see page 456.

HOARSENESS.

After exposure to cold, dry winds, hoarse, croaking voice, like croup; give ACONITE.

Hoarseness, with rough voice; throat dry, red—BELLADONNA.

Chronic hoarseness, *worse in damp evening air*—CARBO VEG-ETABILIS.

Hoarseness early in morning; complete loss of voice—CAUSTICUM.

Hoarseness after croup, worse in cold air; hoarse barking cough—HEPAR.

Hoarseness, with cough; *throat feels as if lined with fur*, worse from talking—PHOSPHORUS.

For repetition of dose, see page 456.

INFLAMMATION OF BOWELS.

In beginning, with chill and high fever, restlessness, dry, hot skin; give ACONITE.

Great heat and tenderness of abdomen, worse from least jar of bed; face flushed red; starting during sleep; constant moaning—BELLADONNA.

Stitching or cutting in bowels, worse from least movement; lies perfectly still; nausea and faintness from sitting up; thirst for large quantities of water at long intervals—BRYONIA.

For repetition of dose, see page 456.

INFLAMMATION OF EYES.

Redness and swelling with acute pain, dryness and heat; after exposure to cold, dry wind; give ACONITE.

Great intolerance of light; redness of eyes with dryness of eyes; sharp pains extending to brain—BELLADONNA.

Scrofulous constitution, chronic cases; swelling and redness of eyes, which are stuck together at night (see Graph.); eruptions on body or scalp—CALCAREA CARB.

Ophthalmia of infants, and during dentition—CHAMOMILLA.

Scrofulous and chronic cases; a sticky, glutinous fluid oozes

from the inflamed eyes, sticking them together; eruptions behind ears; fat pimple—GRAPHITES.

Feeling of sand in eyes, with itching burning. Edges of lids thickened and ulcerated; after suppressed eruptions—SULPHUR.

For repetition of dose, see page 456.

INTERMITTENT FEVER.

When the disease is imperfectly developed, before the chill, there is headache, yawning, stretching, chill intermingled with heat and fever; during fever, great restlessness, thirst, drinking little and often; *great prostration; better from warmth*; give ARSENICUM.

Chill predominates; dry cough; bilious, worse in morning; great thirst for large quantities (Opp. Arsen.); constipated—BRYONIA.

Thirst several hours before the chill, continuing during chill and heat; generally occurs about 7 to 9 a. m.; severe *aching in back and extremities as if bones were broken*—EUPATORIUM PERF.

Chill toward evening; no thirst; physical prostration; malarious locality—GELSEMIUM.

Undeveloped cases; gastric disturbance; much nausea and vomiting—IPECAC.

Chill at 10 A. M.; great thirst; violent headache during fever; cases where quinine has been taken; fever blisters on lips—NATE. MURIATICUM.

Give remedies only during the interval between paroxysms; do not give when chill or fever are present; wait until the sweating stage has nearly passed off. It will only aggravate to give during paroxysm.

For repetition of dose, see page 456.

JAUNDICE.

Where the following symptoms are present; yellow coated tongue, with bitter, bilious vomiting, pains in liver when pressed upon; constipation; dry, hard stools; give BRYONIA.

New born children, green, watery, corroding stools—CHAMOMILLA.

Yellow color of skin; loss of appetite; weakness from loss of animal fluids; yellow, watery, undigested stools, without pain—CHINA.

Skin very yellow; region of liver very painful; stools grayish-white; thickly-coated, flabby tongue—MERCURIUS.

Nausea and bilious vomiting; constipation in persons of sedentary habits—NUX VOMICA.

Greenish, slimy diarrhea; yellow coating on tongue; bad taste in the mouth in morning.—PULSATILLA.

For repetition of dose, see page 456.

KIDNEY COLIC (Passing of Stone to Bladder).

This affection presents the following symptoms: Spasmodic, crampy pain, extending along ureter to bladder (pain from region of kidney to bladder), violent, causing patient great distress. The remedies most valuable in this complaint are Belladonna, which is indicated by intense pain, which is spasmodic, generally worse on right side; urine retained, only passing in drops; and Lycopodium, which will be indicated, if the patient has had previous trouble and there has been *a deposit of red sand in the urine*. Pain in back previous to urination. Great benefit will be derived from hot application to seat of pain and from warm baths.

For repetition of dose see page 456.

LEUCORRHEA (Whites).

Where there is: milk-like discharge; too early and profuse menstruation; scrofulous constitutions; give CALCAREA CARBONICA.

Menses late and scanty; flows and stops and flows again; blue eyes, light hair; mild disposition, milky discharge—PULSATILLA.

Yellowish or greenish water, pus-like, badly smelling, with much itching in parts; dark hair and eyes—SEPIA.

For repetition of dose, see page 456.

MEASLES.

Where there are in the beginning, fever, hot skin, and restlessness; give ACONITE.

If eruption is slow to appear, and dry tight cough, with stitches in chest—BRYONIA.

In beginning, catarrhal symptoms; thick yellow discharge from nose; hoarse cough, thick yellow expectoration; diarrhea at night—PULSATILLA.

For repetition of dose, see page 456.

MORNING SICKNESS (Pregnancy).

Where there are the following symptoms: Vomiting especially after eating; thirst but can take only a little; very weak; *better from hot drinks*—ARSENICUM.

Nausea on waking in morning; feels better by keeping perfectly quiet; dry mouth and tongue—BRYONIA.

Heart burn; sour vomiting; scrofulous constitutions; cold damp feet—CALC. CARB.

Loathing sight and smell of food; when attempting to eat, nausea and vomiting—COLCHICUM.

Continual nausea; vomiting mucus—IPECAC.

Nausea in morning after eating, or while eating; constipation, and sedentary habits—NUX VOMICA.

Bad taste in mouth in morning; eructations, tasting of food; vomiting of mucus; mild disposition, inclined to shed tears—**PULSATILLA**.

Excessive vomiting, with coldness of surface of body; prostration and great thirst for cold water—**VERATRUM**.

For repetition of dose, see page 456.

MUMPS.

Bright red swellings of glands, especially on right side; redness of face and eyes; headache; sleepy, but cannot sleep—**BELLADONNA**.

Hard swelling of gland, with stiffness of jaws and difficulty of swallowing; offensive breath and profuse secretion of saliva; worse at night—**MERCURIUS**.

When disease goes to genital organs; thickly coated tongue; bad taste in morning—**PULSATILLA**.

For repetition of dose, see page 456.

NEURALGIA (Tic Doloieux).

Pain generally on one side, worse at night with great restlessness; face red, hot; give **ACONITE**.

Violent shooting or tearing pain in eye-ball, generally worse on right side; twitching of muscles of face; worse from light and noise in afternoon—**BELLADONNA**.

Intolerable pains, especially at night, causing hot perspiration about the head; very sensitive to pain—**CHAM**.

Periodical attacks, fleeting tearing pains, worse from least contact; ringing in ears, worse every other day; weakly persons—**CHINA**.

Neuralgia of left side of face (Spig.); *worse from touch*, better from rest and warm applications—**COLOCYNTH**.

Pains worse at night in bed; pain starts in decayed teeth; perspiration which affords no relief—**MERCURIUS**.

Pains aggravated by rest, better from warmth, aggravation from getting wet—**RHUS TOX**.

Neuralgia on left side of face (Coloc.); especially about left eye—**SPIGELIA**.

Pains start in a decayed tooth and extend to the eye, drawing tearing pains; very sensitive to least expression—**STAPHYSAGRIA**.

For repetition of dose, see page 456.

NOSE-BLEED.

Sanguine plethoric persons with fullness of head, bright-red blood; give **ACONITE**.

After injury—**ARNICA**.

Congestion of head; bright red blood, flowing freely—**BELLA DONNA**.

Bleeding from overheating; *instead of the menses*—**BRYONIA**.

Ringing in ears, faintness, weakly persons—**CHINA**.

For repetition of dose, see page 456.

PILES.

When the patient presents the following symptoms: Large purple tumors with little hemorrhage; severe backache, worse from the least exertion; rectum feels dry, and as if *full of small sticks*; give **ÆSCULUS HIPPI**.

Blind or bleeding piles, with feeling as if gravel or sand in the rectum; bleeding with feeling of exhaustion—**COLLINSONIA**.

Profuse bleeding piles, with soreness and rawness; dark blood—**HAMAMELIS**.

Frequent and ineffectual urging to stool with blind or bleeding piles; chronic constipation, persons of sedentary habits—**NUX VOMICA**.

Blind or bleeding, chronic cases; *pains shoot up the back*—**SULPHUR**.

For repetition of dose, see page 456.

PLEURISY.

Chill, fever, thirst; tossing about with violent piercing pain in chest, hindering respiration; dry cough; give **ACONITE**.

After mechanical injury; bruised feeling of ribs—**ARNICA**.

Lies on affected side; stitching pain from the least movement; thirst for large quantities at long intervals; nausea and faintness on sitting up—**BRYONIA**.

From exposure to wet; straining or lifting; pain *worse during rest* (Opp. Bry.), better from walking about, and from warmth—**RHUS TOX**.

For repetition of dose, see page 456.

PNEUMONIA (Inflammation of Lungs).

Beginning: Chill, high fever, dry cough, shortness of breath, pains in chest; give **ACONITE**.

Cough with expectoration of tenacious mucus of *rusty or reddish color*; *lies on affected side*; acute stitching pains in chest; pain worse from least movement; breathing or coughing; thirst—**BRYONIA**.

Tightness across chest; dry cough; *rusty* expectoration (Bry.); difficulty of breathing; tall slender persons, sleepy—**PHOSPHORUS**.

Short breathing, moaning with every breath; hoarse cough, but nothing coming up; cold sweat, blueness of face (children)—**TARTAR EMETIC**.

For repetition of dose, see page 456.

RHEUMATISM.

In red swelling of part; very sensitive to touch; feverish, restless; acute attacks; give **ACONITE**.

Worse from motion; swelling and faint redness of part; stitching pains—**BRYONIA**.

About the heart—feeling like an iron band about the heart—**CACTUS G.**

Pains worse during rest (Opp. Bry.), and on beginning to move; relief after getting "warmed up"—**RHUS TOX.**

For repetition of dose, see page 456.

SCARLATINA (Scarlet Fever).

During epidemics, give children a dose of **Belladonna**, 6th or 30th dilution daily; this will prevent many attacks, and will lighten the attack, should the child have it.

In beginning before eruption makes its appearance, when there is fever, thirst, restlessness, vomiting—a dose or two of **ACONITE**.

The eruption does not come out well, or disappears, with headache and cough—**BRYONIA**.

For repetition of dose, see page 456.

Eruption smooth, shining, red tongue, white with red edges; throat inflamed, dry, dark red; throbbing in head; redness of face; jumping during sleep—**BELLADONNA**.

This remedy will be indicated in the majority of cases, and will take them through without the need of any other. Give a dose once in two or three hours. If the case does not progress favorably from the first, consult a homeopathic physician as soon as possible. Do not trust to domestic treatment, if there is any severity of the symptoms.

SCIATICA (Sciatic Neuralgia).

In acute cases, after exposure to dry cold atmosphere, with fever, restlessness, etc.; give **ACONITE**.

If from strain, bruise, mechanical injury—**ARNICA**.

Pain in hip worse from the least motion—**BRYONIA**.

If caused by exposure to wet, straining or lifting, worse in cold damp weather and from keeping quiet (Opp. Bry.); pain relieved by heat and exercise—**RHUS TOX.**

For repetition of dose, see page 456.

SMALL-POX.

In beginning, during febrile stage, headache, bleeding at the nose, restless, anxious; give **ACONITE**.

Eruption dark, skin blue; great prostration; extreme thirst drinking little but often; hemorrhagic variety—**ARSENICUM ALB.**

Pain in back as if it would break; high fever; sore throat; sleepy but cannot sleep; throbbing pain in head—**BELLADONNA**.

Hemorrhagic variety; bleeding from nose and gums of dark blood; bloody stools—HAMAMELIS.

Ulcerated throat, profuse flow of saliva; swollen tongue; perspires without relief; stage of maturation—MERCURIUS SOL.

Complete loss of consciousness; brain affected—OPIUM.

Typhoid character; tongue dry, sore, cracked; restless, worse when keeping quiet; delirious; corners of mouth sore and ulcerated—RHUS TOX.

When disease goes to brain, and in scrofulous constitutions—SULPHUR.

If throat and chest are involved and there is cough, pustules well formed, with fever—TARTAR EMETIC. This remedy is nearest to the specific for this disease.

For repetition of dose, see page 456.

SORE THROAT.

Chronic sore throat; enlargement of tonsils; tonsils enlarge from the least cold—BARYTA CARB.

Great dryness of throat, redness, pain in swallowing, constant inclination to swallow; worse on right side—BELLADONNA.

Sensation as if splinter was in throat, worse in morning; scraping in throat—HEPAR SULPH.

Pain and soreness *begin on left side*; when swallowing pain extends into left ear; can bear nothing to touch neck externally—LACHESIS.

Soreness begins on right side (Bell.); goes over to left—LYCOPodium.

Palate swollen; swelling and inflammatory redness of throat; ulcers on tonsils; profuse secretion of saliva in mouth; glands swollen under jaw, worse at night—MERCURIUS SOL.

Hoarseness with loss of voice; rawness and scraping in throat; dryness of throat, day and night, feels as if cotton was in throat—PHOSPHORUS.

For repetition of dose, see page 456.

SPASMS (Convulsions).

During teething, with high fever, restlessness—ACONITE.

Heat of head, red face; starting and jumping during sleep; twitching of face, mouth, eyes; foam at mouth—BELLADONNA.

Hot sweat on head; *one cheek red, other pale*; constant moaning, wants to be carried all the time; during teething—CHAMOMILLA.

Children troubled with worms; constantly picking and boring at nose; urine turns milky after standing; frequent swallowing as if something was rising in throat—CINA.

Twitching and jerking of all the muscles; trembling and foam at the mouth, with deep sleep—HYOSCYAMUS.

Spasms return at change of moon; wormy children; perspiration about the head during sleep—**SILICEA**.

For repetition of dose, see page 456.

SORE MOUTH.

Bluish livid ulcers in mouth, *burning like fire*—**ARSENICUM ALB.**

Gums loose, receding from teeth; bloody saliva—**CARBO VEGETABILIS**.

Teeth loose, gums painful; copious saliva, tongue swollen, metallic taste—**MERCURIUS SOL.**

After abuse of mercury; stinging pains; corners of mouth sore teeth loose—**NITRIC ACID**.

For repetition of dose, see page 456.

SUNSTROKE.

If head has been exposed to direct rays of sun; throbbing in head, violent thirst, great restlessness—**ACONITE**.

Headache and fullness as if head would burst; red face—**BELLADONNA**.

Feeling as if temples and top of head would burst open; violent throbbing; increased action of heart—**GLONOINE**.

For repetition of dose, see page 456.

TONSILITIS (Quinsy Sore Throat).

Chronic inflammation and swelling; tonsils enlarge from every cold, and ulcerate—**BARYTA CARB.**

Swelling of tonsils, especially the right, when drinking fluid returns through the nose; dark red look, very painful and dry—**BELLADONNA**.

Sticking pain as if a fish bone was in throat; persons of scrofulous habit; disease recurs frequently; when suppuration seems inevitable—**HEPAR SULPH.**

Left side, cannot bear anything to touch the throat; worse after sleeping; pain extends to left ear—**LACHESIS**.

Tonsils dark red and ulcerated; breath offensive, with sore mouth and much saliva; glands swollen; perspiration, but it does not relieve; worse at night—**MERCURIUS SOL.**

When abscess is formed, to hurry breaking, and when the throat feels filled up; throbbing pain, follows well after—**HEPAR SULPH, SILICEA**.

For repetition of dose, see page 456.

TOOTHACHE.

Patient frantic; cannot stand the pain, with great restlessness; throbbing pain at night—**ACONITE**.

After having teeth filled, aching; bruised feeling—ARNICA.

Pains come on suddenly and leave suddenly; generally worse in right side; worse when lying down; face red; pains in teeth, eyes, face—BELLADONNA.

Teeth feel too long; pain in sound teeth; worse from warm food or drink, (Cham., Puls.); *wants to keep perfectly quiet*—BRYONIA.

Hollow teeth worse from draft of air; teeth feel sore—CALCAREA CARB.

Intolerable pains, after taking cold when in a perspiration; drawing, jerking, beating, stitching pain; worse from warm drink—CHAMOMILLA.

Pain relieved by cold water; very wakeful, excited—COFFEE.

Pain in several teeth at the same time; decayed teeth, worse in cool damp air at night and from eating; much saliva in mouth—MERCURIUS SOL.

Worse during rest and in damp weather; better from moving about and warmth; worse from getting wet—RHUS TOX.

For repetition of dose, see page 456.

TYPHOID FEVER.

This fever can hardly come under domestic treatment. But as the treatment in the beginning of this disease is of the utmost importance, we give indications for a few of the most prominent remedies for the beginning of the disease.

In general, Bryonia will be the remedy first called for and will be indicated by the following symptoms: The patient will complain of headache which is of a splitting character and is *worse in the morning and from moving*; the tongue will be coated white at first and then become dry and brown; *cannot sit up from nausea and faintness*; thirst for large quantities of water at long intervals; constipation, dry, hard, brown stools; soreness in region of stomach.

Or, patient is prostrated; there are diarrhea, tenderness of abdomen to pressure, dry black or brownish lips; tongue dry, red, smooth, or *red at tip in the shape of a triangle*; pains in extremities, *worse during rest*; reddish stools, jelly-like, or *like washings of meat*—RHUS TOX.

Trembling of tongue when being protruded, which is red or black, dry and bleeding; stupor and muttering; *symptoms all worse after sleeping*—LACHESIS.

Much disturbance of stomach with white coated tongue and nightly diarrhea; craves cool, fresh air; mild disposition, light hair, blue eyes—PULSATILLA.

Great restlessness, *jumping out of bed with desire to escape*; loss of consciousness; twitching of muscles; *stools and urine pass involuntarily*; tongue red, dry, cracked—HYOSCYAMUS.

As an intercurrent remedy and when other remedies do not act well, and *the tongue is coated thick white all over, with the exception of the edge all around, which is red; early morning diarrhea at 5 a. m., every morning*—SULPHUR.

For repetition of dose, see page 456.

URINARY DIFFICULTIES.

When the symptoms are: Scanty, red, hot urine, with fever and restlessness; give ACONITE.

Frequent desire with passage of only a few drops, with swelling of eyelids—APIS MEL.

Inability to retain urine; feels as if a worm was in bladder; backache as if it were broken—BELLADONNA.

Scalding urine, sometimes mixed with blood; constant desire—CANTHARIS.

Red sandy sediment in urine—LYCOPodium.

Wetting the bed, particularly of little girls—PULSATILLA.

Children wet the bed, especially if afflicted with worms—CINA, SILICEA.

Old men, urinary complaints—DIGITALIS, CONIUM.

Caused by drugs, high living, abuse of spirits—NUX VOMICA.

For repetition of dose, see page 456.

UTERINE HEMORRHAGE.

When persons of full habit are troubled with active hemorrhage, and are very restless; give ACONITE.

Violent pain in small of back; profuse bright red blood, which *feels hot* to the parts; plethoric persons; congestion to head—BELLADONNA.

After miscarriage or labor, discharge of dark clots, weakness, faintness, ringing in ears, wants to be fanned—CHINA.

Discharge of dark stringy blood, with sensation as of something alive in the abdomen—CROCUS SATIVA.

Continual flow of bright red blood, with nausea; cramps in stomach; great weakness—IPECAC.

Discharge is arrested for a while and then returns again; wants doors and windows open; mild disposition, blue eyes, light hair—PULSATILLA.

Discharge of bright red blood, *with pain in thighs*; pain from back through to the front; sometimes mixed with dark clots—SABINA.

Chronic hemorrhage, excited from the least cause; yellow complexion; bearing down pain—SEPIA.

Discharge of *dark liquid blood* with little or no pain; pale face, coldness of extremities, but *does not want to be covered; wants from warmth*—SECALE COR.

For repetition of dose, see page 456.

VERTIGO (Dizziness).

Where occurring from heat of sun, use ACONITE, BELL., GLO-
NOINE (see sunstroke).

Biliousness—BRYONIA, NUX VOMICA.

Deranged stomach—PULSATILLA.

For repetition of dose, see page 456.

VOMITING.

When it results from overloading the stomach, white coated
tongue; give ANTIMONIUM CRUD.

Vomiting immediately after eating or drinking, *with great
prostration*—ARSENICUM ALB.

Bitter bilious vomiting; constipation; worse from motion and
in moving after eating and drinking—BRYONIA.

Vomiting of children; colicky pains around navel—CHAMO-
MILLA.

Great nausea; vomiting of mucus or sour substances—IPECAC.

Vomiting of drunkards; empty retching in the morning; sore
feeling in region of stomach when vomiting—NUX VOMICA.

Vomiting in evening of bitter or sour fluids, or of undigested
food; during suppression of menses and from taking cold—PULSA-
TILLA.

Vomiting, with cold sweat on forehead, of mucus with con-
tinuous nausea and prostration—TARTAR EMETIC.

Vomiting bile or blood or blackish substances with great pros-
tration and coldness of surface of body; thirst for very cold drinks
—VERATRUM ALB.

For repetition of dose, see page 456

VOMITING OF BLOOD.

If caused by mechanical injury, take ARNICA.

Vomiting brownish or blackish substances; great prostration;
restlessness; burning in stomach—ARSENICUM.

Weak, pale after great loss of blood—CHINA.

Sudden attacks with great nausea at stomach; paleness and
coldness—IPECAC.

For repetition of dose, see page 456.

WORM SYMPTOMS.

Constant boring at nose; pain in region of navel; abdomen
hard and distended; frequent swallowing; restless sleep—CINA.

Child worse about change of moon—SILICEA.

Discharge of mucus from the bowels, mixed with worms;
child has pain in abdomen and wants to lean against something
hard—STANNUM.

For pin-worms, give IPEC., LYC. and VERAT. in rotation, one week each, three doses per day.

For repetition of dose, see page 456.

WHOOPIING COUGH.

In the beginning, feverish, dry cough; child grasps at throat every time it coughs; restlessness; give ACONITE.

Child gets very red in the face with every coughing spell; (gets blue, Ipecac); hard cough in paroxysms, without expectoration—BELLADONNA.

Cough after eating or drinking, with pain in chest and with vomiting; great thirst; useful in first stages—BRYONIA.

Last stages; great exhaustion after every coughing spell, with blue skin, cold sweat; coughing and vomiting after every meal—CARBO VEG.

Child very fretful; must be carried all the time; green, watery corroding diarrhea—CHAMOMILLA.

Picking of nose; worm symptoms; child becomes stiff during paroxysm of coughing; blue around mouth—CINA.

Violent paroxysms of cough; child becomes rigid as if dead; vomiting after paroxysm; *a swallow of cold water relieves the cough*—CUPRUM.

Worse about twelve at night; violent paroxysms; child almost suffocates; bleeding from nose and mouth—DROSERA.

Child becomes stiff and blue in the face, chest seems full of mucus, but does not yield to coughing; (similar to Tart. Em.), vomiting mucus—IPECAC.

PULLSATILLA, said by some to be a great remedy to give as a preventive, and in the beginning of an attack. Blue eyes, blonde hair, loose cough with profuse expectoration.

Constant rubbing of nose and face during cough; sneezes during cough; water at nose and eyes; cough excited by cold drink (Opp. Cup.)—SQUILLA.

Cough preceded by crying; rattling cough; chest seems full of mucus, but does not yield to coughing (Ipec.); nausea and vomiting, with cold sweat on head—TARTAR EMETIC.

Convulsive stage; worse in the spring and fall; child exhausted after every coughing spell, with cold sweat on forehead; attacks occur on entering a room, and from drinking cold water; (see Squilla)—VERAT. ALB.

For repetition of dose, see page 456.

DISORDERS OF NURSING.

Sore Nipples.

In first days, when nipples feel sore or bruised, ARNICA tincture diluted with water locally, and ARNICA taken inwardly will relieve.

Ulcer on nipple discharging pus, and when patient is of scrofulous constitution—**CALCAREA CARB.**

Oozing of sticky glutinous fluid, forming a crust, in fleshy subjects, and those with unhealthy skin—**GRAPHITES.**

Supply of Milk.

If supply of milk does not come readily consult the following. If skin is hot, and there is thirst and restlessness—**ACONITE.**

Breasts feel heavy, appear hard and red and hot, with drowsiness and headache—**BELLADONNA.**

Breasts feel heavy like a stone, with dry lips and mouth, and headache with nausea and faintness on sitting up—**BRYONIA.**

Breasts distended, milk scanty; feels cold air readily; want of vital activity—**CALCAREA CARB.**

Pain extends from nipple to the shoulder-blade, when child nurses—**CROTON TIGLIUM.**

Infant refuses breast, or vomits immediately after nursing—**SILICEA** to mother.

Excessive flow of milk will be met by **CALCAREA CARB.**, or by careful attention to general health, and administration of proper remedies to correct any symptoms that may occur in other portions of body or functions.

For inflammation of the breast the remedies mentioned under **SUPPLY OF MILK** will suggest themselves; but generally, **ACON.**, **BRY.**, and **BELLADONNA** will be the ones needed.

For "AGUE" of the breast, **ACON.**, **BRY.**, and **BELL.**, according to indications. Aconite with chill, fever, thirst, restlessness, etc.

BRYONIA will follow well after the Aconite, and when the breast is heavy like a stone, with splitting headache, nausea and faint from sitting up.

BELLADONNA when there is heaviness and redness, and heat of breast, and the face is red and patient drowsy, but cannot sleep.

PHYTOLACCA DECANDRA when breast threatens to become inflamed, and when it is very hard from the first. It is useful when abscess threatens or has formed.

For repetition of dose, see page 456.

Milk Leg.

Whitish swelling on foot and leg, with sensation of coldness, as though a cold damp cloth covered it; milk suppressed; menses have been generally too profuse—**CALCAREA CARB.**

Drawing pain from hip to foot, with a pale pink swelling of the leg; *worse from motion*; dry lips and mouth, and thirst—**BRYONIA.**

Worse in warm room; it aggravates all her suffering; pale swelling with suppression of milk, with bad taste in the mouth; no thirst—**PULSATILLA.**

Great restlessness; worse from keeping the limb quiet; *better from warmth*—RHUS. TOX.

For repetition of dose, see page 456.

Sleeplessness of Infants.

From colic, teething and cold, CHAMOMILLA; from excitement —COFFEE, BELLADONNA.

EARACHE, induced by cold, with fever and restlessness, ACONITE, followed by Pulsatilla if not relieved; if swelling about the ear—MURCURIUS.

In cases of styes PULSATILLA will generally suffice. If condition becomes chronic, SULPHUR or HEPAR SULPHUR, or LYCOPodium.

For repetition of dose, see page 456.

DIVISION TWELFTH.

DOMESTIC ANIMALS.

EDITED BY JONATHAN PERIAM, AUTHOR OF THE AMERICAN CYCLOPEDIA OF
LIVE STOCK; HOME AND FARM MANUAL; AMERICAN ENCYCLOPEDIA
OF AGRICULTURE; FARMERS' STOCK BOOK, ETC.

THE HORSE.

Of all the domestic animals, the horse is the chief, and stands nearest to man, both as regards purposes of utility and pleasure. It is the indispensable coadjutor of man in every sphere of labor, and is essential to almost all his undertakings. Whether in tilling the soil, gathering the harvest, marketing the produce, or going to and fro either for pleasure or profit, the horse is man's most useful and most familiar friend. It has been said with a good deal of truth that you may gather the character of a man from the appearance of his horse. If he be a man of prudence and of proper pride, he will have the best horse for his purpose his means will allow; if he be just, generous and humane, the horse will show by the marks of good treatment and good feeding, that his services and his value are appreciated.

Perhaps there is no other direction in which men are customarily so wasteful of their resources as in the treatment of their horses. These are treated too often as if the only obligation they entailed upon their owners was that of feed and shelter, and as if, instead of possessing an anatomy of flesh and blood, they were endowed with frames of iron and lungs and arterial structures of leather. Under the ordinary treatment the horse is deprived fully on an average of one-half the natural term of his existence, and is a useless hulk at ten or twelve years of age, when by careful attention to his physical needs, he would be a sound and serviceable animal at twenty.

How to Tell the Age of the Horse—The age of the horse is of the utmost consequence to the intending purchaser, because upon that depends the value of the investment you make in

him, and therefore, his soundness having been established, the age of the horse largely determines his value. . This is to be arrived at with sufficient accuracy by his "mouth," the distinguishing marks being the appearance of the teeth, which is, with a margin of allowance for variations of feeding, uniformly characteristic at different ages.

A colt sheds two teeth above and below at two; one on each side, above and below at three; and corner ones at four; at five the teeth have grown up on the outside, but the corner teeth have not grown up on the inside; at six the center teeth below are smooth; at seven one on each side; at eight all smooth below; at nine the center teeth above are smooth.

Teeth of the Horse—Owing to the fact that the permanent front teeth of the horse—which horsemen call nippers—wear down, so as to present a different appearance at different stages of this wearing process, we have always a means of knowing the age of a horse up to a certain period. How this may be done, will be seen, by certain plain and simple directions, coupled with illustrations as

Figure 1.



Three-Years-old Mouth.

given, which will enable any one to put them in practice. It should be remarked, however, in this connection, that the rapidity with which a colt's teeth wear down will depend, to some considerable extent, upon the kind of food upon which he is raised; those fed on grain and hay wearing down much faster than those fed chiefly on

grass; and those fed on gritty pastures still faster. As answering all the purposes necessary to the information desired to be conveyed, *Fig. 1* correctly shows the mouth of the colt at three years of age.

At this age, the mouth presents the appearance shown above, the development of the teeth varying somewhat in different horses. In four or six months, after this age, one of the nippers falls out on each side, and a permanent tooth appears in its place. The corner nippers are also much worn, and the mark in them has nearly disappeared. At four years of age, the following changes will be observed, from the appearance of the mouth as shown in the cut (*Fig. 1*). The central nippers will have begun to lose their sharp

Figure 2.



Mouth at Four and a Half Years.

edges, and be considerably more grown. The next nipper, on each side, will be grown almost to its full size, with its edges very sharp, and the mark deep and plain. The corner milk nippers will still remain, unless they have been removed, which is sometimes done to hasten the growth of the permanent teeth, and to make the horse appear older than he really is, by four or five months.

As shown in the cut (*Fig. 2*) between four and a half and five years, the corner nippers fall out and the tusks, or canine teeth, come through the gum.

The number of teeth in a horse's mouth is complete at five years of age. The incisors present the appearance as shown at *Fig. 3*, modified as to wear, if hard food has been given or if the colt has been fed on gritty pastures.

Figure 3.

Mouth at Five Years.

The above cut shows the teeth at this age, and, on comparing it with their appearance in *Fig. 2*, the growth of half a year may be seen. After five years, there is no more shedding of a horse's teeth, so far as the incisors and canines are concerned. They are the permanent teeth and the horse is said to have a full mouth.

Figure 4.

Lower Teeth of a Six-Year-Old.

Up to the six-year-old mouth and from that to the eighth or ninth year the age of the horse can be definitely known by the

appearance of the incisors. At six years is perhaps the best by which the horse's age can be certainly and precisely told; though by careful observation, one may come very near the truth some years later. At this age (six years), it is the lower jaw that we must study, as shown in *Fig. 4*.

This cut shows the marks in the central nippers almost worn out, but still looking like surrounding circles of brown matter in the middle; next to this appears the cement, then the enamel, then the dentine, with a thin layer of enamel outside. Up to this time the nippers are nearly perpendicular to each other, only a slight convexity being apparent where they are seen together.

Figure 5.



Upper Nippers of Eight-Years-Old.

An appearance, similar to that already shown in the lower nippers at six years of age, will be observed in the upper nippers at eight. This will appear in the cut *Fig. 5*.

The upper middle nippers are quite worn down at nine years of age, the next pair have only a small mark left on their level surface, and the corner ones have only a black stain, without any noticeable sinking in the middle.

After a horse is nine years of age, you can only approximate his age from the teeth. They grow in length slowly, and are nearer in a line with the jaw. The surface of the nippers, as seen by the eye, assumes a triangular shape, in place of the oval appearance shown in *Fig. 5*, and this shape again disappears after twelve years of age, the tooth becoming almost round. As the length of the tooth increases, the color is changed until, in the oldest

horses, it becomes a dirty yellow, streaked with brown and black; and the tushes wear almost out, and sometimes drop out.

As age increases the teeth wear more and more and from appearing round, they become oval again; but this oval shape instead of appearing in the line of the teeth, is from front to rear. The marks in old age are completely worn out because the shape appears in conformity with the wear of the teeth. A six year nipper dissected from the jaw will be oval as to its upper surface. A little lower down it will be round, still lower the oval shape will continue to be more and more assumed in a line from front to rear, and the teeth from the peculiar course of the entire tooth will continue to point nearer and nearer straight out of the mouth. At eight years the incisors are all oval, the length of the ovals running across the line of the teeth. With age the teeth get rounder, and a separation begins to be seen between them. At nine the central nippers, show in a rounded form as to their upper surface. At ten the others begin to show the same form. At thirteen years the corner incisors present the same appearance. At fourteen the central nippers begin to show a triangular shape. At seventeen the incisors are all triangular. At nineteen the angles begin to wear off, and the central nippers are again oval as in the six-year-old mouth, but in the direction as stated; that is, from outside to inside. At twenty-one years all the nippers present this form. Hence when this is observed a horse is said to be "of age."

TO BREAK A HORSE OF SCARING.

Turn your horse into the barn-yard, or a large stable will do, and then gather up something that you know will frighten him—a red blanket, a buffalo-robe or something of that kind. Hold it up so that he can see it. He will stick up his head and snort. Then throw it down somewhere in the center of the lot or barn and walk off to one side. If he is frightened at the object he will not rest until he has touched it with his nose. You will see him begin to walk around the robe and snort, all the time getting a little closer, as if drawn up by some magic spell, until he finally gets within reach of it. He will then very cautiously stretch out his neck as far as he can reach, merely touching it with his nose, as though he thought it was ready to fly at him. But after he has repeated these touches a few times (though he has been looking at it from the first), he seems to have an idea what it is. And after he has found, by the sense of feeling, that it is nothing that will do him any harm, he is ready to play with it; and should he run in that lot a few days, the robe that frightened him so much at first, will be no more to him than a familiar stump. In the same manner the young horse should be accustomed to various strange sights and objects. At length the voice of the master will reassure the animal under any circumstances.

HOW TO MANAGE A STUBBORN HORSE.

If the horse, instead of being wild, seems to be of a stubborn or mulish disposition, if he lays back his ears as you approach him or turns his heels to kick you, he has not that regard or fear of man that he should have to enable you to handle him quickly and easily. It may be necessary to give him a few sharp cuts with the whip about the legs, pretty close to the body. It will crack keenly as it plies around his legs, and the crack of the whip will affect him as much as the stroke; besides one sharp cut about his legs will affect him more than two or three over his back, the skin on the inner part of his legs or about his flanks being thinner and more tender than on his back. But do not whip him much—just enough to excite his sense of fear. But whatever you do, do quickly, sharply and with a good deal of fire, but always without anger. Never go into a pitched battle with your horse and whip him till he is mad and will fight you. You had better not touch him at all, for you will establish, instead of fear and regard, feelings of resentment, hatred and ill-will. It will do him no good, but an injury, to strike a blow, unless you quell him. As soon as you have frightened him so that he will stand up straight and pay some attention to you, approach him again and caress him a good deal more than you whipped him; then you will excite the two controlling passions of his nature, love and fear, and then he will fear and love you too, and as soon as he learns what to do, will quickly obey.

HALTERING THE COLT.

As soon as you have gentled the colt a little, take the halter in your left hand and approach him, and on the same side on which you have gentled him. If he is very timid about your approaching closely to him, you can get up to him quicker by making the whip a part of your arm and reaching out very gently with the butt-end of it, rubbing him lightly on the neck, all the time getting a little closer, shortening the whip by taking it up in your hand until you finally get close enough to put your hands on him. If he is inclined to hold his head from you, put the end of the halter strap around his neck, drop your whip and draw very gently; he will let his neck give and you can pull his head to you. Then take hold of that part of the halter which buckles over the top of his head, and pass the long side, or that part which goes into the buckle, under his neck, grasping it on the opposite side with your right hand, letting the first strap loose; the latter will be sufficient to hold his head to you. Lower the halter a little, just enough to get his nose into that part which goes around it; then raise it somewhat and fasten the top buckle, and you will have it all right. The first time you halter a colt you should stand on the left side, pretty well back to his

shoulder, only taking hold of that part of the halter that goes around his neck; then with your hands about his neck you can hold his head to you, and raise the halter on it without making him dodge by putting your hands about his nose. You should have a long rope or strap ready, and as soon as you have the halter on, attach this to it, so that you can let him walk the length of the stable without letting go of the strap, or without making him pull on the halter; for if you only let him feel the weight of your hand on the halter and give him rope when he runs from you he will never rear, pull or throw himself, yet you will be holding him all the time and doing more towards gentling him than if you had the power to curb him right up and hold him to one spot; because he does not know anything about his strength, and if you don't do anything to make him pull, he will never know that he can. In a few minutes you can begin to control him with the halter; then shorten the distance between yourself and the horse, by taking up the strap in your hand.

Leading—As soon as he will allow you to hold him by a tolerably short strap, and step up to him without flying back, you can begin to give him some idea about leading. But to do this do not go before and attempt to pull him after you, but commence by pulling him very quietly to one side. He has nothing to brace either side of his neck, and will soon yield to a steady, gradual pull of the halter; and as soon as you have pulled him a step or two to one side, step up to him and caress him, and then pull him again, repeating this operation until you can pull him around in every direction, and walk about the stable with him, which you can do in a few minutes; for he will soon think, when you have made him step to the right or left a few times, that he is compelled to follow the pull of the halter, not knowing that he has the power to resist your pulling; besides, you have handled him so gently that he is not afraid of you, and you always caress him when he comes up to you; he likes that and will easily follow you after he has had a few lessons of that kind; if you turn him out in a lot he will come to you every opportunity he gets. You should lead him about in the stable some time before you take him out, opening the door so that he can see out, leading him up to it and back again, and past it. See that there is nothing on the outside to make him jump when you take him out, and as you go out with him try to make him go very slowly, catching hold of the halter close to the jaw, with your left hand, while the right is resting on the top of the neck, holding to his mane. After you are out with him a little while, you can lead him about as you please. Don't let any second person come up to you when you first take him out; a stranger taking hold of the halter would frighten him and make him run. There should not be even any one standing near him, to attract his attention or scare him. If you are alone and manage him right, it will require little more force to lead or hold him than it would to manage a broken horse.

PULLING ON THE HALTER.

You should lead a broken horse into the stable first, and get the colt, if you can, to follow in after him. If he refuses to go, step up to him, taking a little stick or switch in your right hand; then take hold of the halter close to his head with your left hand, at the same time reaching over his back with your right arm, so that you can tap him on the opposite side with your switch; bring him up facing the door, tap him lightly with your switch, reaching as far back with it as you can. This tapping, by being pretty well back and on the opposite side, will drive him ahead and keep him close to you; then by giving him the right direction with your left hand, you can walk into the stable with him. Never seek to get a colt into the stable by main force. Human brute force against animal brute force never accomplished any good result, whether the animal was large or small. If you cannot lead him in at once in this way, turn him about and walk him around in every direction until you can get him up to the door without pulling at him. Then let him stand a few minutes, keeping his head in the right direction with the halter, and he will walk in in less than ten minutes. Never attempt to pull the colt into the stable. That would make him think at once that it was a dangerous place, and if he was not afraid of it before, he would be then. Besides, we do not want him to know anything about pulling on the halter. Colts are often hurt, and sometimes killed, by trying to force them into the stable; and those who attempt to do it in that way, go into an up-hill business, when a plain, smooth road is before them.

The Stall—If you want to hitch your colt, put him in a tolerably wide stall, which should not be too long, and should be connected by a bar or something of that kind to the partition behind it, so that after the colt is in he cannot get far enough back to take a straight, backward pull on the halter; then, by hitching him in the centre of the stall, it will be impossible for him to pull on the halter, the partition behind preventing him from going back, and the halter in the centre checking him every time he turns to the left or right. In a stall of this kind you can break the horse to stand hitched by a light strap, anywhere, without his ever knowing anything about pulling. But if you have broken your horse to lead, and have taught him the use of the halter (which you should always do before you hitch him to anything), you can hitch him in any kind of a stall, and give him something to eat to keep him up to his place for a few minutes at first, and there is not one colt in fifty that will pull on his halter.

Another Method—First, buckle a strap around the left fore-leg of the animal, just above the knee; then pass the halter-strap through the hole in the manger and make it fast to the strap around the fore-leg. As the horse pulls back, it pulls his fore-leg forward; and no horse will enjoy breaking his halter at the expense of his

leg. A few trials will generally cure him. But, a horse once having firmly acquired a vice, is never after perfectly safe.

TO MAKE THE COLT TAKE THE BIT KINDLY.

Use a large, smooth, snaffle-bit, so as not to hurt his mouth, with a bar on each side to prevent the bit from pulling through either way. This you should attach to the head-stall of your bridle and put it on your colt without any reins to it, and let him run loose in a large stable or shed some time until he has become a little used to the bit and will bear it without trying to get it out of his mouth. It would be well, if convenient, to repeat this several times before you do anything more with the colt; as soon as he will bear the bit, attach a single rein to it without any martingale. You should also have a halter on your colt, or a bridle made after the fashion of a halter, with a strap to it, so that you can hold or lead him without pulling on the bit much. He is now ready for the saddle.

SADDLING.

Any one man who has discretion and firmness, can put a saddle on the wildest colt without help and without scaring him. The first thing will be to tie each stirrup-strap into a loose knot to make them short and prevent the stirrups from flying about and striking him. Then double up the skirts and take the saddle under your right arm so as not to frighten him with it as you approach. When you get to him rub him gently a few times with your hand and then raise the saddle very slowly until he can see it, and smell and feel it with his nose. Then let the skirts loose and rub it very gently against his neck the way the hair lies, letting him hear the rattle of the skirts as he feels them against him; each time getting a little farther backward and finally slip it over his shoulders on his back. Shake it a little with your hand and in less than five minutes you can rattle it about his back as much as you please and pull it off and throw it on again without his paying much attention to it.

The Girth—As soon as you have accustomed him to the saddle, fasten the girth. Be careful how you do this. It often frightens a colt when he feels the girth binding him and making the saddle fit tightly on his back. You should bring up the girth very gently and not draw it too tightly at first, just enough to hold the saddle on. Move him a little and then gird it as tightly as you choose and he will not mind it. You should see that the pad of your saddle is all right before you put it on and that there is nothing to make it hurt him or feel unpleasant to his back. It should not have any loose straps on the back part of it to flap about and scare him. After you have saddled him in this way, take a switch in your right hand to tap him up with, and walk about in the stable a

few times with your right arm over the saddle, taking hold of the reins on each side of his neck with your right and left hands; thus marching him about in the stable until you teach him the use of the bridle and can turn him about in any direction and stop him by a gentle pull of the rein. Always caress him and loose the reins a little every time you stop him.

The Stable Preferred—You should always be alone and have your colt in some tight stable or shed the first time you ride him; the loft should be high so that you can sit on his back without endangering your head. You can teach him more in two hours' time in a stable of this kind than you could in two weeks in the common way of breaking colts, out in an open place. If you follow this course of treatment you need not run any risk or have any trouble in riding the worst kind of a horse. You take him a step at a time until you get up a mutual confidence and trust between yourself and horse. First teach him to lead and stand hitched; next acquaint him with the saddle and the use of the bit, and then all that remains is to get on him without scaring him and you can ride him as well as any broken horse.

MOUNTING.

First, gentle him well on both sides about the saddle, and all over, until he will stand still without holding, and is not afraid to see you anywhere about him. As soon as you have him thus gentled, get a block about one foot or eighteen inches in height and set it down by the side of him, about where you want to stand to mount him; step upon this, raising yourself very gently; horses notice every change of position very closely and if you were to step up suddenly on the block it would be very apt to scare him; but by raising yourself gradually on it, he will see you without being frightened in a position very nearly the same as while you are on his back. As soon as he will bear this without alarm, untie the stirrup-strap next to you and put your left foot into the stirrup and stand square over it, holding your knee against the horse and your toe out so as to touch him under the shoulder with the toe of your boot. Place your right hand on the front of the saddle and on the opposite side to you, taking hold of a portion of the mane and the reins as they hang loosely over his neck with your left hand; then gradually bear your weight on the stirrup and on your right hand until the horse feels your whole weight on the saddle; repeat this several times, each time raising yourself a little higher from the block, until he will allow you to raise your leg over his croup and place yourself in the saddle.

Mounting from the Block—There are three great advantages in having a block to mount from. First, a sudden change of position is very apt to frighten a young horse that has never been handled; he will allow you to walk up to him and stand by his

side without scaring at you, because you have gentled him to that position; but if you get down on your hands and knees and crawl towards him he will be very much frightened; and upon the same principle he would be frightened at your new position if you had the power to hold yourself over his back without touching him. Then the first great advantage of the block is to gradually gentle him to that new position in which he will see you when you ride him. Secondly, by the process of leaning your weight in the stirrup and on your hand you can gradually accustom him to your weight so as not to frighten him by having him feel it all at once. And in the third place, the block elevates you so that you will not have to make a spring in order to get on the horse's back, but from it you can gradually raise yourself into the saddle. When you take these precautions there is no horse so wild but that you can at length mount him without making him jump. When mounting, your horse should always stand without being held. A horse is never well broken when he has to be held with a tight rein while mounting; and a colt is never so safe to mount as when you see that assurance of confidence and absence of fear which will cause him to stand without holding.

RIDING.

All this preliminary work may be done in the stable. The young horse may be first ridden there if there is plenty of room for turning freely back and forth. When you want him to start do not touch him on the side with your heel, or do anything to frighten him and make him jump, but speak to him kindly and if he does not start, pull him a little to the left until he starts and then let him walk off slowly with the reins loose. Walk him around in the stable a few times until he gets used to the bit and you can turn him about in every direction and stop him as you please. It would be well to get off and on a good many times until he gets perfectly used to it before you take him out of the stable. After you have trained him in this way, which should not take you more than one or two hours, you can ride him anywhere you choose without ever having him jump or make any effort to throw you.

When you first take him out of the stable be very gentle with him, as he will feel a little more at liberty to jump or run, and be a little more easily frightened than he was while in the stable. But after handling him so much in the stable he will be pretty well broken, and you will be able to manage him without trouble or danger.

To Prevent Jumping—When you first mount him take a little the shorter hold on the left rein, so that if anything frightens him you can prevent him from jumping by pulling his head around to you. This operation of pulling a horse's head around against his side will prevent any horse from jumping ahead, rearing up or running away. If he is stubborn and will not go, you can make him

move by pulling his head around to one side, when whipping will have no effect. And turning him around a few times will make him dizzy, and then, by letting him have his head straight and giving him a little touch with the whip, he will go along without any trouble.

Use of the Martingale—Never use martingales on a colt when you first ride him; every movement of the hand should go right to the bit in the direction in which it is applied to the reins, without a martingale to change the direction of the force applied. You can guide the colt much better without them and teach him the use of the bit in much less time. Besides, martingales would prevent you from pulling his head around if he should try to jump. After your colt has been ridden until he is gentle and well accustomed to the bit, you may find it an advantage, if he carries his head too high or his nose too far out, to put martingales on him.

You should be careful not to ride your colt so far at first as to heat, worry or tire him. Get off as soon as you see he is a little fatigued; gentle him and let him rest; this will render him kind and prevent him from getting stubborn or vicious.

Horsemanship—The rider should, in the first place, let the horse know that he is not afraid of him. Before mounting a horse take the rein into the left hand, draw it sufficiently tight, so you can control him, put the left foot in the stirrup and rise quickly into the saddle. When you are seated, press your knees to the saddle, letting your leg from the knee stand out, turn your toe in and heel out, sit upright in your saddle, throw your weight forward—one-third of it in the stirrups—and hold your rein tight enough to control the horse.

BITTING HARNESS.

Farmers often put biting-harness on a colt the first thing they do to him, buckling up the biting as tight as they can draw it to make him carry his head high, and then turn him out in a lot to run a half-day at a time. This is one of the worst punishments that they could inflict on the colt and very injurious to a young horse that has been used to running in pasture with his head down. Colts are often so injured in this way that they never get over it.

A horse should be well accustomed to the bit before you put on the biting-harness, and when you first bit him you should only rein his head up to that point where he naturally holds it, let that be high or low; he will soon learn that he cannot lower his head and that raising it a little will loosen the bit in his mouth. This will give him the idea of raising his head to loosen the bit, and then you can draw the check-rein a little tighter every time you put it on and he will still raise his head to loosen it. By this means you will gradually get his head and neck in the position you want him to carry them, and give him a nice and graceful carriage without serious strain of muscles, or causing his mouth to get sore.

If you put the biting-harness on very tight the first time, he cannot raise his head enough to loosen it, but will bear on it all the time and paw, sweat and throw himself. Many horses have been killed by falling backwards with the harness on; their heads being drawn up, strike the ground with the whole weight of the body. Horses that have their heads drawn up tightly should not have the harness on more than fifteen or twenty minutes at a time, at first, but eventually the colt may be allowed to exercise with it on for an hour or more.

DRIVING A WILD AND VICIOUS HORSE.

Procure a strong strap, an inch and a half wide, with a loop at one end, and long enough so the end may be passed once at least around the leg near the knee, when the hoof is turned up to the body. Raise the foot, until the sole is turned upward, and close to the body. Fasten the end of the strap by passing it twice about the leg just above the pastern joint in a loop, or a ring may be used for the leg above the knee, and a second strap to fasten to the lower part of the leg and connect them with. There is something in this operation of taking up one foot that conquers a horse quicker and better than anything else you can do to him. There is no process in the world equal to it to break a kicking horse. When you first fasten up a horse's foot he will sometimes get wild and strike with his knee and try to get it down; but he cannot do that and will soon give up. When you find that he is conquered, go to him, let down his foot, rub his leg with your hand, caress him and then let him rest a little; then put it up again. Repeat this a few times, always putting up the same foot, and he will soon learn to travel on three legs so that you can drive him some distance. As soon as he gets a little used to this way of traveling put on your harness and hitch him to a sulky. If he is the worst kicking horse that ever raised a foot you need not be fearful of his doing any damage while he has one foot up, for he cannot kick, neither can he run fast enough to do any harm. And if he is the wildest horse that ever had harness on and has run away every time he has been hitched, you can now hitch him in a sulky and drive him as you please. Thus you will generally cure him at once of any further notion of running. Kicking horses have always been the dread of everybody. An inveterate kicker may attempt his trick with every new driver, but the man who has subdued him as stated, can drive him.

But by this new method you can hitch them to a rattling sulky, plow, wagon, or anything else in its worst shape. They may be frightened at first, but cannot kick or do anything to hurt themselves, and will soon find that you do not intend to hurt them, and then they will not care anything more about it. You can then let down the leg and drive along gently without any further trouble. By this process a bad kicking horse can be taught to go gently in harness often in a few hours' time.

TO CURE BALKY HORSES.

Horses know nothing about balking, except as they are brought into it by improper management. When a horse balks in harness, it is generally from some mismanagement, excitement, confusion, or from not knowing how to pull, but seldom from any unwillingness to perform all that he understands. High spirited, free-going horses are the most subject to balking, and only so because drivers do not understand how to manage them. A free horse in a team may be so anxious to go that when he hears the word he will start with a jump, which will not move the load, but give him such a severe jerk on the shoulders that he will fly back and stop the other horse; the teamster will continue his driving without any cessation and by the time he has the slow horse started again he will find that the free horse has made another jump and again flown back. Then perhaps he has them both badly balked, and so confused that neither of them knows what is the matter, or how to start the load.

Bad Management—Next will come the slashing and cracking of the whip and hallooing of the driver, till something is broken or he is through with his course of treatment. What a mistake is made by whipping the horse for this act. Reason and common sense should teach the driver that the horse was willing to go, but did not know how to start the load. And should he whip him for that? A man should act rationally; should not fly into a passion, but should think before he strikes. It takes a steady pressure against the collar to move a load and you cannot expect an animal to act with a steady, determined purpose while you are whipping him. There is hardly one balking horse in five hundred that will pull true from whipping. It will only make him more liable to balk another time. You always see horses that have been balked a few times turn their heads and look back. This is because they have been whipped and are afraid of what is behind them. This is an invariable rule with balked horses.

The Right Way—When your horse balks, or is a little excited, if he wants to start quickly, or looks around and don't want to go, caress him kindly, and if he don't understand at once what you want him to do, he will not be so much excited as to jump and break things and do wrong through fear. As long as you are calm and can keep down the excitement of the horse, there are ten chances to have him understand you where there would not be one under harsh treatment; and then the little flare-up would not carry with it any unfavorable recollection and he would soon forget all about it, and learn to pull true. Almost every wrong act the horse commits is from mismanagement, fear, or excitement; one harsh word will so excite a nervous horse as to increase his pulse ten beats in a minute.

When we remember that we are dealing with dumb brutes, and reflect how difficult it must be for them to understand our motions,

signs and language, we should never get out of patience with them because they do not understand us, or wonder at their doing things wrong. With all our intellect, if we were placed in the horse's situation, it would be difficult for us to understand the driving of some foreigner, of foreign ways and foreign language. We should always recollect that our ways and language are just as foreign and unknown to the horse as any language in the world is to us and should try to practice what we could understand were we the horse, endeavoring by some simple means to work on his understanding, rather than on the different parts of his body.

Almost any team, when first balked, will start kindly if you let them stand five or ten minutes, as though there was nothing wrong, and then speak to them with a steady voice and turn them a little to the right or left, so as to get them both in motion before they feel the pinch of the load. If you want to start a team that you are not driving yourself, that has been balked and whipped for some time, go to them and hang the lines on their hames, or fasten them to the wagon, so that they will be perfectly loose; make the driver and spectators (if there be any) stand off some distance to one side so as not to attract the attention of the horses; unloose their check-reins so that they can get their heads down if they choose; let them stand a few minutes in this condition until you can see that they are a little composed. While they are standing you should be about their heads, gentling them; it will make them a little more kind. When you have them ready to start, stand before them, and as you seldom have but one balky horse in a team, get as near in front of him as you can, and if he is too fast for the other horse, let his nose come against your breast; this will keep him steady, for he will go slow rather than run on you. Turn them gently to the right, without letting them pull on the traces, as far as the tongue will let them go; stop them with a kind word, gentle them a little, and then turn them back to the left by the same process. You will have them under your control by this time, and as you turn them again to the right, steady them in the collar, and you can take them where you please, unless the load is beyond their power to move.

To Start The Balky Horse—There is another plan that will generally start a balky horse, but not so surely. Stand him a little ahead so that his shoulders will be against the collar, and then take up one of his fore feet in your hand, and let the driver start them, and when the weight comes against his shoulders he will try to step; then let him have his foot and he will go right along. If you want to break a horse from balking that has long been in that habit you ought to set apart a half-day for that purpose. Put him by the side of some steady horse; have check lines on them; tie up all the traces and straps, so that there will be nothing to excite them; do not rein them up, but let them have their heads loose. Walk them about together for some time as slowly and lazily as possible; stop often, and go up to your balky horse

and gentle him. Do not take any whip about him, or do anything to excite him, but keep him as quiet as you can. He will soon learn to start off at the word, and stop whenever you tell him. As soon as he performs right, hitch him to an empty wagon; have it stand in a favorable position for starting. It would be well to shorten the stay-chain behind the steady horse so that, if it is necessary, he can take the weight of the wagon the first time you start them. Drive but a few rods at first; watch your balky horse closely and if you see that he is getting excited, stop him before he stops of his own accord; caress him a little and start again. As soon as they go well, drive them over a rise of land a few times and then over a greater one, occasionally adding a little load. This process will make any horse true to pull for a careful driver.

Other Methods—There are various other methods often practiced as, building a fire under a horse; filling his mouth with earth; taking him out of the harness and whirling him around in a circle until he is dizzy; tying some hard substance in his ear and various other such means. The horse will often start off after such practice. It is simply that the horse has had his mind thrown in a new direction. He has forgotten the previous trouble, and the driver has probably become calm. Any other more suitable means would better have accomplished the object. In fact, if the horse cannot be made to perform without undue abuse, arbitrary and brutal means will not permanently effect a cure.

PULLING BACK.

A horse may generally be broken of this disagreeable and annoying habit by the following means: Place on his head a strong leather head-stall halter, with iron rings strongly sewed at the junction of the cheek-pieces and nose-band. Have a strong surcingle made out of wide webbing cloth or leather, on each side of which, in a line with the base of the tail where the crupper-strap comes, sew two iron rings. Take a stout piece of marline, such as is used by the riggers of vessels, sufficient in length to secure one end firmly to the ring on the off or right-hand side of the halter; pass back through the ring sewed in the surcingle on the same side, thence under the tail and forward on the left side through the ring sewed on the near or left-hand side of the surcingle; also through the ring sewed on the same or near side of the cheek-piece and nose-band of the halter. Then tie this end of the marline to the ring used for tying the animal in the stall. Oil the marline well before using, in order that it may readily pass through the rings. This will prove an efficacious remedy, and at the same time a perfectly harmless one to the animal.

EDUCATION OF THE HORSE.

Breaking to Harness—Take the horse in a tight stable, as you did to ride him; with the harness go through

the same process you did with the saddle, until you get him familiar with it, so that you can put it on him and rattle it about without his caring for it. As soon as he will bear this, put on the lines, fondle him as you draw them over him and drive him about in the stable till he will bear them over his hips. The lines are a great aggravation to some colts and often frighten them as much as if you were to raise a whip over them. As soon as he is familiar with the harness and lines, take him out and put him by the side of a gentle horse and go through the same process that you did to gentle the balking horse. Always use a bridle without blinds when you are breaking a horse to harness.

To Make a Horse Lie Down—What we want to teach the horse must be commenced in some way to give him an idea of what you require him to do and then be repeated till he learns it perfectly. To make a horse lie down, bend his left fore-leg and slip a loop over it, so that he cannot get it down. Then put a surcingle around his body and fasten one end of a long strap around the other fore-leg, just above the hoof. Place the other end under the surcingle, so as to keep the strap in the right hand; stand on the left side of the horse, grasp the bit in your left hand, pull steadily on the strap with your right, bear against his shoulder till you cause him to move. As soon as he lifts his weight, your pulling will raise the other foot and he will have to come on his knees. Keep the strap tight in your hands, so that he cannot straighten his leg if he raises up. Hold him in this position and turn his head toward you; bear against his side with your shoulder, not hard, but with a steady, equal pressure, and in about ten minutes he will lie down. As soon as he lies down he will be completely conquered and you can handle him as you please. Take off the straps and straighten out his legs, rub him lightly about the face and neck with your hand the way the hair lies, handle all his legs, and after he has lain ten or twenty minutes, let him get up again. After resting him a short time, make him lie down as before. Repeat the operation three or four times, which will be sufficient for one lesson. Give him two lessons a day, and when you have given him a few lessons he will lie down by taking hold of one foot. As soon as he is well broken to lie down in this way, tap him on the opposite leg with a switch when you take hold of his foot and in a few days he will lie down from the mere motion of the switch.

To Make a Horse Follow—Turn him into a large stable or shed—where there is no chance to get out—with a halter or bridle on. Go to him and gentle him a little; take hold of his halter and turn him towards you, at the same time touching him lightly over the hips with a long whip. Lead him the length of the stable, rubbing him on the neck, saying in a steady tone of voice as you lead him, "Come along," using his name always. Every time you turn, touch him lightly with the whip, to make him step up close to you and then caress him with your hand. He will soon

learn to follow closely to escape the whip and be caressed; thus you can make him follow you around without taking hold of the halter. If he should stop and turn from you, give him a sharp cut about the hind legs and he will soon turn his head towards you, when you must always caress him. A few lessons of this kind will make him run after you when he sees the motion of the whip; in twenty or thirty minutes he will follow you about the stable. After you have given him two or three lessons in the stable, take him out into a small lot and train him, and from thence you can take him into the road and make him follow you anywhere and run after you.

To Make Him Stand Without Hitching—After you have him well broken to follow you, stand him in the center of the stable and begin at his head to caress him, gradually working backward. If he moves give him a cut with the whip and put him back in the same spot from which he started. If he stands caress him as before and continue gentling him in this way until you can get round him without making him move. Keep walking around him, increasing your pace, and only touch him occasionally. Enlarge the circle as you walk around, and if he then moves give him a cut with the whip and put him back to his place. If he stands go to him frequently and caress him, and then walk around him again. Do not keep him in one position too long at a time, but make him come to you occasionally and follow you around the stable. Then stand him in another place and proceed as before. You should not train your horse more than half an hour at a time.

To Break a Horse from Kicking—An old horse-trainer gives the following directions:

“Take his tail, part it in the middle and tie a knot in it, and pass the halter-strap through the loop made in the tail by the knot, and make it fast so that the horse cannot go in any way except in a circle. Then take a pole and work it up and down his legs while he is circling in the ring. The object is to get him used to having his legs handled. Work him for about ten minutes in that position, and then cut a bush about the size of a common currant bush, tie this to his tail, so that it will drag on the ground, then whirl him for about fifteen minutes more, then put the harness on him: if he works all right, well and good; if he does not, go through the operation again.

“Another way of breaking a kicker is with a small cord about twenty feet long and about three-eighths of an inch thick. Pass it over the horse's neck, putting the center of the cord on the horse's withers and crossing the cord in the horse's mouth, then bring it back to the hind legs, making it fast by buckling a leather strap around the legs, between the pastern and the coronal joint. Then fasten your line in the cord that is on the horse's neck, stand off and start him; when he makes an attempt to kick the cord draws and hurts his mouth and as a horse can think of but one thing at a time, he thinks of his mouth and forgets to kick. This plan is

almost sure to break him, as I never knew a horse to kick more than three to five times with this training."

Crib-biting—Is a habit many horses learn to crib from decayed or aching teeth. The spasmodic cribbing cannot be cured. It may be prevented by buckling a strap so tight about the neck that it cannot be given the peculiar arch necessary to cribbing. Another way is to keep a wire muzzle on his head continually, only removing it at meal-times, adjusting it again immediately after he has finished his meal. Another way may be adopted as a preventive; remove the manger entirely and feed his hay from the floor and his grain from a nose-bag, and nail sheet-iron or zinc, full width, commencing two feet six inches from the floor, extending upwards and around the partition walls of his stall. This will prevent him from fastening his teeth on any object that will allow him to crib. Ordinary care and judgment with regard to food and treatment is all that is necessary in ordinary cases of crib-biting.

To Catch a Horse in a Pasture—The most successful method, if the horse has a trick of refusing to be caught, is to turn him into the smallest lot you have, so that when he runs from you he must circle about this small enclosure. Walk slowly around in the center of the lot, following the motions of the horse, until he stops, and then go up to him and caress him, always speaking kindly to him. Keep this up until he will allow you to approach him without shying or running. A few lessons of this sort will entirely correct his bad habit, which proceeds entirely from fear, and he will soon follow you like a dog.

To Break a Horse of Jumping—Sew a strap of leather one and one-half or two inches broad to the head-stall, so that it will pass directly across the eyes of the horse. Split the leather into four or five strips. It must be so arranged that when he raises his head to jump these strips will come directly over his eyes, and he will at once desist from jumping any fence.

TREATMENT OF DOMESTIC ANIMALS.

Kindness—Domestic animals of all kinds should be treated with gentleness and mildness; men or boys who are rash and bad-tempered, ought not to be permitted to have charge of them. Animals that are kept in constant fear of suffering never thrive well, and they often become vicious and intractable by unkind and cruel treatment.

Salt Essential to Health—All domestic animals should be abundantly furnished with salt. Horses and pigs should occasionally have ashes given them in their food; and pigs ought at all times, when confined in pens, to be supplied with charcoal, bituminous coal or rotten wood, as, besides being an alterative, it is a cheap and valuable remedy against indigestion.

Proper Time for Blanketing Horses—When a horse

becomes heated by exercise, he should be walked about for a few minutes—a longer or shorter period, according to the circumstances, until cooled down to about the ordinary temperature, but not in any degree towards chilliness; then throw on the blanket and lead him to the stable.

HOW TO GIVE MEDICINE.

Every person should learn to give a ball or a drench. A horse ball is the size and shape of the thumb. A drench is a liquid compound to be given from a bottle. There is a right way and a wrong way to give either. Little is to be accomplished by main force. An animal will always fight against this. The practitioner will give a ball or a drench without tying up the horse's head. The novice had better do so. Draw up the horse's head to such a height that the operator can reach the mouth. Tie with straps leading from the halter ring to each side of the stall so that the animal cannot throw his head from side to side. Take out the horse's tongue, holding it out from the side beyond you. Do not pull hard, only enough to fairly stretch the tongue out. Lay the ball well back in the mouth in the proper direction for swallowing. When it is placed let the tongue relax slowly into the mouth, and the ball will be swallowed. To drench, take out the tongue as before. Have the liquid in a long-necked very strong bottle, insert the neck between the incisors and grinders, and as well back as possible. Release the tongue, keeping the mouth of the bottle well up in the roof of the mouth, between the grinders, pour the contents slowly in as the animal can swallow, holding the head with the fingers over the jaw between the nippers and grinders. If the bottle is broken or the animal struggles, release the head instantly. Small doses may be given with a syringe, and small animals may be dosed from a spoon.

DISEASES OF HORSES.

The reader will find the remedies here given different from those in other treatises on this subject, being generally home remedies and readily available, at any time in any household.

BIG HEAD.

There are various injuries to the head called big head, big jaw, etc. If these affect the bone, are cancerous, or present the outward exhibition of tuberculosis, whether the bone softens and decays, or becomes hard and brittle, as in the case of tumors of the bone of the horse's jaw, they are considered incurable, and are undoubtedly so. If the true nature of the disease is known early, blistering may scatter the affection.

Symptoms—There will be difficulty in eating; the enlargement increases fast; fever and emaciation follow, and if not promptly treated death will ensue.

Remedies—Apply the following blister:

Linseed oil	1 pt.
Oil of spike	1 oz.
Turpentine	2 oz.
Pulverized cantharides	1 dr.

Apply to the affected parts, heating with a hot iron, for three days; then grease, wash off and apply as before until healed.

2. Take of powdered gentian 4 drachms.
- “ “ phosphate of iron 2 “
- “ “ linseed cake 4 pounds.

Give the whole of this quantity in the horse's feed, every twenty-four hours, until relief is perceptible; then give about one-fourth the quantity.

As a constitutional remedy give the horse a small tablespoonful of the seed of stramonium (Jimson weed), once a day for nine days. Discontinue its use for nine days, then give for nine more. Three treatments of nine days each will generally suffice.

Feed no corn, and the hay and oats should be perfectly sound. Every effort should be made to restore the general health of the horse. He may be worked regularly, but moderately. The stable should be well ventilated, dry and clean.

BOTS.

Symptoms—An unhealthy coat, and loss of flesh after turning out from pasture. Cannot be distinguished from those of colic, unless near the time of maturity. Bots are not easily displaced.

Remedies—1. Dissolve a lump of alum the size of a walnut in a pint of water and give immediately. It may, in some cases, be necessary to repeat the dose.

2. Give one pint of milk and one of molasses, followed by a dose of castor-oil (eight or ten tablespoonfuls). This is an old remedy, but often efficacious.

3. Take of raw linseed oil 1 quart.
- Molasses 1 “
- New milk 2 “
- Warm sage-tea 2 “

Give as follows: Fifteen minutes after giving the milk and molasses, give the sage-tea, and half an hour after this, give the linseed-oil. Lard is sometimes given in place of the oil.

4. Mix one pint honey with one quart sweet milk, give as a drench. One hour after dissolve one ounce pulverized copperas in a pint of water; use likewise; then give one quart of linseed oil. This will generally prove effectual.

BRUISES AND SPRAINS.

Symptoms—Lameness, tenderness on pressure, peculiarity of movement.

Remedies—1. Apply twice a day a strong decoction of wormwood, made with hot vinegar, and it will be found to surpass in efficacy any liniment that can be obtained for simple bruises and sprains.

2. One of the very best means for the relief of sprains is a thorough application of beef-brine to the part, by bathing, and wrapping the part in cloths saturated with the brine.

3. Plantain leaves, mixed with vinegar, is likewise a prompt and effectual application. It is to be thoroughly bruised, and a small quantity of vinegar added, and applied in the form of a poultice, and occasionally renewed. This has been known to cure sprains in twenty-four hours.

BROKEN WIND.

Symptoms—Broken wind may be detected by the double inspiration. Inspiration is performed as usual; then comes a rapid but not violent act of expiration, followed by a forcible repetition of the same, in which all the muscles of respiration are called into play. This is most manifest when the horse has been galloped.

Remedies—There is no cure for this disease if confirmed in its character; the treatment can only be palliative. Latterly arsenic has been used successfully in connection with green food. It is best given to the extent of fifteen grains daily, in broken doses five grains each dose, and given at equal periods, for two or three weeks, or one ounce of Fowler's solution of arsenic may be given. In either case the operator should watch the effect carefully. Begin with one dose a day, and increase up to three as the animal may be able to take it.

The feed of broken winded horses should consist chiefly of bright, clean hay, with a proper amount of oats; and beans may be added when the horse is not young. He should be confined to slow work.

Carrots sliced and mixed with bran is an excellent diet for relieving this affection.

It should always be borne in mind that the food of the horse should be in as small a compass as possible. The water should never be given within an hour of going out of the stable, and whether at work or not, he should be watered often, and but little at a time.

BRONCHITIS.

Symptoms—This disease is characterized by two distinct stages, with the following symptoms:

First—Acute, the horse is suddenly attacked with an irritable cough and sore throat, with feverish symptoms, such as quick, wiry pulse; mucous membranes of nose and mouth redder than usual; and hurried breathing.

Second—Chronic, sets in after the acute stage has subsided; is marked by a discharge of watery and sometimes mucous fluid from the nose, and the breathing is attended with a wheezing sound and an occasional cough.

Remedies—To relieve congestion of the parts most affected, and equalize the circulation, use drachm doses of powdered lobelia seeds twice a day, with warmth and moisture applied to the throat externally. Encircle the throat with a piece of soft flannel and continue till certain the remedy has taken effect. To protect the mucous membranes of the air passages from irritation, no better article exists than slippery elm. A small portion of the powdered bark is stirred into boiling water to form a mucilage, just thick enough to drink. To a pint of this add two ounces sirup of garlic, and give twice a day. The bowels are to be kept loose by soft feed, given while warm, with plenty of tepid drink, gruel, seasoned with salt, etc.

This is an admirable treatment for this difficulty.

CATARACT.

Symptoms—In the early stage of the disease a small white speck appears in the centre of the lens of the eye. Sometimes, however, it is first observed at the upper or lower margin of the pupil; it gradually increases in size until the sight is wholly obliterated. Cataract being well defined the only remedy is extirpation by a competent veterinary surgeon.

In case of spurious cataract, the following will generally remove the difficulty: Burnt alum, finely pulverized and blown into the eye with a pipe-stem or goose-quill. The oil of winter-green is likewise used. It should be injected with a small glass syringe. A few drops are sufficient. The injection is to be repeated in three days.

CATARRH, OR COLD.

Symptoms—There is invariably some degree of feverishness—sometimes quite marked—sometimes noted only on close attention. Usually the pulse will be at forty to fifty; appetite impaired, and often sore throat with more or less cough. Interior of nostrils unnaturally red, at first dry and swollen, followed by a watery discharge, which soon becomes thick, yellow, and in bad cases purulent. The eyes are generally affected and the inner corners

blood-shot, and frequently with watery discharge from the eyes. There is always an expression of sleepiness or dullness.

Remedies—1. The diet should consist of scalded bran, and other soft food, and be given warm. A quart of flax-seed tea, sweetened with honey may be given night and morning. If the throat is sore, a little powered bloodroot should be added. Keep the bowels open with injections of warm water, into which a small quantity of soft soap may be stirred. If the case is attended with a troublesome cough, give plenty of meal gruel, adding to each dose or administration, one drachm of balsam of fir or copaiba.

2. An effectual remedy for the sore throat in this disease, is to rub the throat with kerosene; then saturate two or three thicknesses of flannel with the same and bind around the throat. When the soreness is cured, remove the flannel gradually, a fold at a time.

3. Mix half an ounce of nitre with water and let the horse drink it. It is best first to dissolve the nitre in a pint of water, which can then be added to a larger quantity—as much as the horse will drink. Give your horse a bran mash every second morning. If the disease has become chronic, inject a weak solution of alum into the nostrils. This will remove the discharge.

Colds—To cure coughs and colds give twenty grains of bromide of potassium in a bucket of water, three times a day for four days. This includes all kinds of cough, except that brought on by heaves. Another excellent treatment is to give a cold bran mash once a day with half a pound of linseed and one ounce of saltpetre in each mash.

COLIC.

Symptoms—Acute pain, stamping, looking at the flanks, rolling; then, perhaps an interval of rest or quiet; then another paroxysm, with repeated efforts to strike the belly with the legs and feet, sometimes even drawing blood in their frantic struggles to get relief. The surface of the belly remains cool, and the pulse but slightly accelerated; but the attacks are usually quite sudden and as suddenly cease. In inflammation of the bowels the symptoms are similar, but the belly is never actually touched in striking.

Remedies—1. Give one ounce (two tablespoonfuls) of the tincture of asafetida. It very seldom fails to cure in twenty to thirty minutes, but if it should fail, repeat the dose. It is generally known that to drench a horse with salt-water will cure some forms of colic.

2. Take soft soap.....1 gill

Warm water.....3 pints.

Inject into the rectum with a syringe or cow's horn. Usually one injection is sufficient to effect a cure.

3. Those who have employed saleratus in colic regard it as a

superior remedy. They dissolve and use at a dose one-half to two-thirds of a teacupful.

4. Dr. Goss says he has saved the lives of many valuable horses, affected with this disease, by the use of tobacco; infuse an ounce in a pint of water and use as an injection.

5. *Sugar and hot water is one of the most speedy and effectual remedies known for the cure of colic in horses.* Albert Johnson, veterinary surgeon of Chicago, says that he has used it for the past fifteen years and has cured numerous cases with it in all stages of the disease, and has never known a remedy that will cure it so readily as this one will. See page 539 for its use.

6. Some veterinary surgeons who have used the following pronounce it a speedy cure for this disease: Steep four ounces of green tea in a pint and a half of water. Use as a drench.

For Flatulent or Wind Colic—Give the following in one dose: One-half pint of water; eight tablespoonfuls of whisky, and two ounces of sulphuric ether. One dose will generally be sufficient. Two ounces of gunpowder given at a dose will often afford relief.

CONTRACTION OF THE HOOF.

Symptoms—While standing in the stable the horse will point with, or place forward, one foot; or if both be affected, alternately the one and the other. While not exhibiting the decided lameness which indicates a sprain, his step will be short and quick and the foot placed tenderly on the ground, and he is constantly tripping or stumbling. In most cases the heels appear narrower and the foot longer.

Remedies—Most cases of this affection are caused by the ignorance and errors of the smith who does the shoeing. But when associated with inflammatory action of the cartilages it must be treated in the same manner as founder. In all cases we must give the frog a bearing on the ground, and to do that the shoe must, or ought to be, removed.

1. A dry, brittle, and contracted hoof may be improved by repeated poulticing with soft soap and rye meal, applied cold. As soon as the hoof softens, let it be dressed, night and morning, with turpentine, linseed oil, and powdered charcoal, equal parts. Still a run at grass, in soft pasture, with tips only on his feet, will do more than any other treatment. But if the horse must be kept in the stable, the best application to make is a stuffing of wet oakum, which can be removed at pleasure. To keep it in contact with the sole, insinuate two thin strips of wood between the shoe and the sole, one lengthwise, the other crosswise. This affords considerable pressure to the foot, is cooling and cleanly and is the best thing known for the purpose.

2. Rasp the front part of the foot and saturate the whole foot with the following hoof-liquid: Eight ounces spirits turpentine, six ounces oil of tar, six ounces linseed oil, four ounces oil origanum. Mix and apply every morning.

CORNES.

Symptoms—In the angle of the inner heels, the horn of the sole has sometimes a reddish appearance and is more soft and spongy than at any other part, and the horse flinches when this part is pressed upon.

Remedies—Remove the shoe, cut out the bruised part, fill with turpentine and lard, equal parts. Heat in with a hot iron. The after treatment is to keep the sole soft and moist by an occasional poultice of linseed meal, first well cleaning the sole, and to have the shoes reset often.

COUGH, CHRONIC.

Symptoms—Are all summed up in the presence of a dry cough without fever, or indications that the horse has taken cold. The cough is seldom manifested in the stable, or while standing at ease; but appears readily when driven faster than a walk. A few dry coughs are then given, and then the horse may be able to proceed with his usual work; but after resting even for a short time, and then resuming exercise, the cough is again heard, and thus becomes very annoying.

Remedies.—1. A palliative remedy and a good one is one-half pint each of tar-water and lime-water, and one drachm of powdered squills; this dose to be given every morning until relief is obtained.

2. If there seems greater distress apply the following blister to the chest: Croton oil, one drachm; sulphuric ether and alcohol, of each ten drachms. Rub well into the chest until the skin becomes very sore; then apply lard daily until healed.

3. See that the hay is not musty and feed roots and laxative food. Cut cedar boughs fine and mix with his grain; or boil a small quantity of flax-seed and mix it in a mash of scalded bran, sweetening lightly with honey or sugar.

CRACKED HOOFS.

Symptoms—Are mechanical and can scarcely escape observation.

Remedies—The hoof should be pressed together and clinched by a thin horse nail.

Then apply the hoof-ointment (for mode of preparing it see "Hoof-Bind") once a day for the first two or three weeks; after which once in two or three days.

The ointment is only employed for the purpose of expediting the cure. The animal should not be put to heavy pulling during the treatment.

DIABETES, OR PROFUSE STALING.

Symptoms—Frequent or constant effort to urinate. Urine generally deep color and often quite dark. These frequent efforts to void the urine, are, in severe cases, attended by great pain, manifested by the countenance, groans, and frequent looking toward the loins. The pulse is quick and hard. The hind feet are kept wider apart than in health—the back is arched, and the horse will move only when compelled.

The above symptoms combined, indicate diseased kidneys; but if the urine be clear or natural color, with the above attending symptoms, the trouble is in the neck of the bladder.

Remedies—1. Feeding a bran-mash containing carrots will ordinarily relieve this disease.

2. If the case is severe give twice daily: Iodine, one-half drachm; sulphate of iron, two drachms, and powdered gentian, one-half ounce. Mix into a thumb-shaped ball with molasses. Five or six doses should effect a cure.

DIARRHEA.

Symptoms—It is not uncommon for a horse while on full feed and after a hearty draught of water, to have several loose evacuations from the bowels, soon after being started off for a day's travel. This state of the horse need cause no fear, however, as the animal can perform his active duty far better on a *disgorged* stomach, and no active treatment should be taken to check this condition.

When the diarrhea evidently results from a deranged action of the liver, manifested by copious watery discharges with fecal matter and slime of a dark yellow tinge, the disease then often runs into a chronic type, with impaired appetite and general debility and loss of flesh.

Remedies—1. In nearly all cases of chronic diarrhea use freely, and with perfect success, finely powdered charcoal—four tablespoonfuls of the powder in a liberal supply of wheat flour gruel, seasoned with equal parts of salt and cinnamon. Should an astringent be really needed after these copious discharges have continued for several days, add to each administration of the flour-gruel one ounce of powdered Bayberry bark.

2. For simple diarrhea, use:

Gum-Arabic.....2 ounces

Boiling water.....1 pint

Dissolve and then add

Oil of peppermint.....25 drops.

Mix, and give at a dose, and repeat night and morning.

3. The following will be found a good remedy:

Gum-Arabic.....1 ounce

Powdered chalk.....1 ounce

Essence or oil of peppermint20 drops

Water..... $\frac{1}{2}$ pint

Mix and give twice a day.

DISTEMPER, OR STRANGLES.

Symptoms—The attack as a rule is light, but often malignant and difficult to manage. There will be more or less fever, the mouth hot, limbs cold, coat staring, loss of appetite and often nervous prostration; the throat becomes swollen; there is cough with difficulty in swallowing; the nose runs and the mucus soon becomes purulent.

Treatment—In malignant cases the advice of a veterinary surgeon should be obtained, since there may be complications that cannot be understood by the ordinary observer. Good nursing throughout the disease is essential. The animal must be kept warm and free from draughts. Keep up the strength with soft, nourishing food and gruels. Do nothing to deplete the system. If there is obstruction of the bowels give injections of warm water and soap-suds to relieve the bowels. Apply hot linseed poultices to the neck until the swelling breaks, or at least is very thin, when it may be punctured with a knife to let the pus escape. Allow it to discharge freely, simply washing with warm water to keep it clean and syringing it with the same if necessary. During the length of the fever stage give every three hours a wineglassful of the following, with a syringe gently injecting it well back into the mouth: Sweet spirits of nitre, one ounce; tincture of aconite root, one drachm; fluid extract of belladonna, two drachms; and one ounce each of the following: Saltpetre, tincture of gentian, and powdered sal. ammoniac; add water to make one pint and give at intervals as above directed, gradually increasing to three times a day. As improvement becomes evident, change to the following during convalescence: Take of tincture of iron and tincture of gentian each one ounce; add water to make twelve ounces; give two tablespoonfuls three times a day until the appetite returns.

DYSPEPSIA.

Symptoms—The horse shows an unthrifty condition, and dry, pin-feathered coat; his body shrivels and contracts; has a dry-sounding cough, mostly noticed after meals, especially when he has just made a hearty one on foul litter, which he is quite apt to do, though at other times he is quite fastidious. An offensive breath is common; and the excrement also has an unpleasant smell, and is variable in color and consistence; often hard and covered with slime; at other times soft, when the presence of worms can be detected. The urine is scanty, and either colored or thickened with foreign material; in fact, both the functions of excretion and secretion are impaired.

Remedies—1. A change of food is one of the best means that can be employed for the cure of this disease, as all domestic animals suffer in health if constantly fed on the same articles of food. To prevent cattle and sheep losing their condition, their pasture is changed from time to time; yet horses are expected to go on eating hay and oats for years together, without injury to health, and at the same time exposed to a very irregular amount of exercise.

When proper attention is paid to the frequent change of food, the appetite will seldom fail in a horse of good constitution; if he is regularly worked the dyspeptic stomach generally is restored to its proper tone.

2. Evaporate the liquid substance from beef-gall; give of the wax a piece as large as a grain of wheat, three times a day for ten days. This will be found to produce most satisfactory results.

3. A run at grass is one of the best means of effecting a permanent cure. At the same time give a tablespoonful in soft feed, night and morning, of the following:

Sulphate of iron,	$\frac{1}{2}$ ounce.
Nitrate of potash,	1 ounce.
Fengreek seed,	2 drachms.
Linseed meal,	2 ounces.

Powder and mix with the food.

DYSENTERY.

Symptoms—An advanced stage of diarrhea. The amount of mucus surrounding the feces will give evidence of the inflammation. The discharges may or may not be bloody.

Remedies—Rice water should be the sole drink in diarrhea or dysentery.

1. For dysentery in colts, steep a handful of the inner bark of white oak in a quart of boiling water. When cold, give half a teacupful every night and morning, and increase or make stronger as needed. This is one of the best remedies in use for checking the

disease gradually. Many colts are lost every year by checking the discharge too suddenly.

2. Give the whites of three eggs and a teaspoonful of alum at each feed until cured. This is for the full grown horse; if it be a colt affected, rub the gums from the center-nippers above and below, and give one third the quantity.

3. If long continued give, powdered ipecac, one drachm, powdered opium, twenty grains, and castor oil six to eight grains, in a pint of boiled starch; give every six hours, up to three or four doses, for a full grown horse.

EPIZOOTIC—INFLUENZA—PINK EYE.

Symptoms—At first the horse is dull or dumpish, indicating debility. This is a remarkable feature which seldom presents itself in any other form of disease so early. To a casual observer, the horse looks as if he had been sick for months. The eye is also indicative of the disease; its vessels are turgid and have a red appearance, hence the term Pink Eye. The lids are swollen, and the animal shrinks from light as if its rays caused pain; the tears trickle from the eye. The hind legs swell, and frequently other parts of the animal become dropsical. This swelling of the legs, be it more or less, is, with the other features named, characteristic of the disease. The hair has an unhealthy appearance. The ears, nose and limbs are cold or hot, according to the stage of the disease.

The appetite is poor from the first, and any attempt to swallow shows the throat to be excessively sore. The back part of the mouth is thickly coated, and saliva runs freely—although not always, as sometimes the mouth is dry and feverish; the excrements are voided in small quantities; all the functions are torpid as is the animal itself. In a few days a nasal discharge sets in, which is considered a favorable symptom. Sometimes, however, the disease terminates in abscesses under the jaws, and the animal has a troublesome cough. These are the main features of this disease, but they vary in different subjects, both in mode of attack, intensity, duration and termination.

Remedies—1. The smoke of sulphur, in the stable until the horse coughs slightly, will facilitate a cure.

2. The following remedy is much in vogue with farmers in the West, and is said to be an excellent remedy: Throw live coals into a tin can; put on feathers; then put the can in a sack and hold over the horse's nostrils until he begins to cough. Repeat two or three times, unless a free discharge of the nostrils is sooner produced.

3. Good nursing is the best treatment. Blanket the animal, and let the stable be well ventilated, but free from draft. For the

cough and sore throat give as a dose two or three times a day, the following:

Iodine, 20 grains.
 Iodide of potassium, 1 drachm.
 Sweet spirits of nitre, 2 ounces.

Mix in one pint of water gruel. As the animal recovers give soft, nourishing food.

4. The following is the popular treatment with many veterinary surgeons for this disease. For the cough, take of:

Spirit of nitric ether, 10 ounces.
 Laudanum, 4 drachms.
 Nitrate of potash, 3 "
 Water, 1 pint.

Mix, and give as a drench night and morning.

After the cough has subsided somewhat, and convalescence has set in, give the following as a stomachic ball:

Extract of gentian, 6 drachms.
 Powdered ginger, 2 "

Mix.

EYE AFFECTIONS.

To Test Horses' Eyes—Look at the eye when the horse is in a dark stable; then turn him about to a strong light, and if you observe that the pupil contracts and appears much smaller than in the first instance, you may infer that he has a good strong eye, but if the pupil remain nearly of the same size in both cases, his eyes are weak, and you had better have nothing to do with him.

Remedies—1. For sore and scummed eyes on horses, take fresh butter or sweet lard, honey and the white of three eggs, well stirred up with salt ground to a fine powder; mix it well and apply to the eye with a feather. Also rub above the eye, in the hollow, with the salve. Wash freely with cold soft water, to which a little black pepper is added.

3. For a bruised eye, take rabbit's fat or fresh butter and use as above directed. Bathe freely with fresh rain-water. Many bloodshot eyes have been cured with this simple remedy.

4. For removing film and granulations from horses' eyes, pulverize to a fine powder, equal parts of loaf-sugar and salt. Of this preparation fill an ordinary goose-quill to the extent of one-fourth of an inch. Blow it into the eye of the horse twice a day. Two hours after each operation, wash his eyes with warm milk. One week's use of this remedy will effect a cure.

FISTULA.

Symptoms—Inflammation and tenderness of the points of the spinal joints mostly pressed by the saddle. When this inflam-

mation is neglected, it soon leads to the formation of an abscess, which may be known by a feeling of shifting or changing under pressure of the fingers.

Remedies—1. The tumefied parts should be kept constantly wet by means of bandages thoroughly saturated in a mixture composed of equal parts of pure cider vinegar and cold water. This treatment should be well persevered in for a few days. Should the tumor in the meantime increase in its size and the parts develop much heat, a poultice of bruised flaxseed should be applied twice daily for forty-eight or ninety-six hours, or until the tumor manifests a fluctuating feeling. You will please note that no procrastination should be indulged in, such as waiting patiently for the tumor to break of its own accord, but as soon as the pus or matter can be distinctly felt by pressure, make an incision slantingly with a sharp knife upon the right side of the neck at the base of the abscess. The incision or cut must not be made so deep as to come in contact with the spinal cord or marrow. The opening at the base of the tumor should be made sufficiently large to allow the pus to freely escape as fast as it forms. A seton should be passed down from the natural opening at the top of the tumor through the artificial opening made at its base. Before inserting the seton it should be dipped in tincture of cantharides. This will be found the safest and best plan to adopt for promoting healthy granulation and adhesion of the walls of the tumor. The fistulous track is not probably very long and the tape-seton will work its way gradually but efficaciously out, by which time the cure is made. A stimulus is also necessary, to be applied to the interior of the tumor by re-saturating the seton, in three or four days after it is first inserted, with a solution made by dissolving ten grains of nitrate of silver in one ounce of cold water. This latter named stimulus should be applied twice per week until a healthy discharge of pus appears; then stop. In the opening, from the top down to the artificial opening at the bottom, should be injected three times a week a lotion composed of one drachm of chloride of zinc dissolved in one pint of cold water. Apply the zinc lotion in half an hour after using the cantharides tincture and the nitrate of silver solution. The tincture of cantharides should only be applied once, and the nitrate of silver solution on the third or fourth day after and continued as long as found necessary; but the zinc-lotion should be applied once daily until a healthy granulation takes place; then every second or third day until the parts heal soundly. If pipes are really found they must be opened to the bottom else no healthy state can be expected.

2. When the fistula makes its appearance, rowel both sides or the shoulder; if it should break, take one ounce of verdigris, one ounce of oil-resin, one ounce of copperas, pulverize and mix together. Use as a salve.

3. Take of Spanish flies one ounce, gum euphorbium three

drachms, tartar-emetic one ounce, rosin three ounces; mix and pulverize, and then mix them with a half pound of lard. Anoint every three days for three weeks; grease the parts affected with lard every four days. Wash with soap and water before using the salve. The above is recommended also as an efficient remedy in outside callus, spavin, ring-bone, curbs, etc.; also for poll evil.

FOUNDER.

Symptoms—Painful, inflammatory affection of tendons, muscles, ligaments and extremities of bones, especially in the feet, and has various degrees. In the lighter variety, the animal is anxious, slow; the affected feet are warm and sensitive to pressure; the animal likes to remain lying down; when standing it puts one or the other fore-leg forward, and rests principally upon the hind feet. The appetite is not bad. In a higher degree, the animal does not wish to stir; the feet are hot and painful; if only the fore-feet are affected they are put forward and the weight of the body bears upon the hind-feet; but, if all the four feet are affected, the animal is tormented by anguish, trembles, and raises first one foot, and then another.

Remedies—1. The seeds of the sunflower are a well known remedy for the cure of founder. Immediately on discovering that your horse is foundered, mix about a pint of the whole seed in his food, and continue this from time to time till a cure is reached.

2. A horse may be worked the next day after being foundered, and permanently cured in twenty-four hours by prompt use of the following remedy. Boil or steam stout oat straw for half an hour; then wrap around the horse's leg quite hot, and keep steam in by binding with woolen cloths. After six hours renew the application. Some persons take one gallon of blood from the neck vein in addition to the above.—*A. J. Smith, V. S.*

3. Among the remedies in use, for this difficulty, is alum. Give a tablespoonful (dissolved) two or three times a day.

4. For treating this disease in its early stages, place the horse's feet in water that is as hot as he can bear, and letting them remain for six hours, being careful to keep up the temperature of the water, even increasing it as he becomes accustomed to the heat, you will find him greatly improved at the end of the above specified time.

After this, use the Hoof-Ointment (see "Hoofbind"), heating it into the bottom of the hoof with a hot iron, and immediately afterwards give the horse a gentle laxative of powdered aloes 2 to 4 drachms, bi-carbonate of soda 1 ounce, in a pint of warm meal or gruel. If the disease becomes chronic but little can be done to relieve the stiffness.

FOUL SHEATH—DIRECTIONS FOR STALLIONS.

The sheath of a stallion may be kept clean by occasionally washing with Castile-soap and warm water, applied with a very soft sponge; the pouch should be thoroughly dried from all soapy material, both inside and outside; the inside may then be rubbed slightly with olive oil. Considerable care and judgment must be exercised in washing the sheath during the winter and early spring months, or the animal will not do well subsequently. No foreign bodies or material that may be found in any way attached to the inside of the pouch or sheath should be violently rubbed off with the sponge nor picked off with the fingers when washing, but all must be soaked off by means of the soapsuds. The oil above prescribed must be used very sparingly, as when it is used too lavishly it will cause dirt to collect in the parts anointed.

Feed—Six to eight quarts of sound and sweet oats, and fourteen pounds of sweet and sound hay per day, is generally sufficient grain and provender for a horse; and a few carrots or Swedish turnips, well washed and sliced, may be added with advantage. A large piece of rock-salt should be kept in his feed-box. Two or three hours of moderate exercise daily is necessary for a horse to keep him in good normal condition. Where this cannot be given he should be turned out daily during the winter and spring months, in pleasant weather, in an enclosure.

FLAT FOOT.

Remedy—The only remedy for this is to throw the weight off the heel. To do this, the shoe should be sprung backwards, from the last nail hole, so that it will tend to curve downwards; this will make the shoe spring with every step of the horse, and lessen the weight on the heel. A horse shod in this way will walk with much more ease.

GALLING THE SHOULDERS.

Remedies—1. The following is recommended for this purpose: Wash the shoulders of the horse with strong alum-water twice a day for several successive days before using him; also use as a wash a strong decoction of white-oak bark, or, while letting the horse rest, raise the collar and pull it forward and rub the shoulder with the hand.

2. Another plan is to wash with a lather of Castile soapsuds, and leave the lather of soap on the shoulders.

3. To prevent galling when tender shoulders are suspected, wash the parts with slightly salted cold water every night, after first washing with Castile-soap and water. Then rub the parts dry.

For ointment see page 538

GLANDERS.

Symptoms—Its chronic character and insidious onset distinguish it from catarrh. It is confined at first to the internal lining of the nostrils which presents a leaden or purple color (not red as in catarrh) at first very light. This is accompanied by a thin acrid discharge, generally from one nostril, transparent and without odor. After an indefinite period the second stage intervenes, the discharge increases in quantity and slightly sticky. The lymphatic glands below the jaw enlarge and become adherent to the bone, feeling hard to the touch. This is the diagnostic sign of glanders, when the patient ought to be destroyed, as the disease is contagious both to other animals and to man himself. In the third stage the discharge is pure pus. The lining membrane of the nose exhibits ulcers, the sores spread to the larynx, ulcers break out on the body and the animal soon dies.

There is no cure for glanders; once it is well defined, kill the horse, bury deeply, and thoroughly disinfect the stable.

GRAVEL, OR STONE IN THE BLADDER.

Symptoms—Difficulty of voiding the urine, which generally comes away in jets, after great straining and groaning. The horse remains with his legs extended for some time afterwards, and thus indicates that his bladder is not relieved. Often there is muco-purulent matter mixed with the urine, which is rendered thick and glutinous thereby, but this happens only in cases of long standing. A horse with the gravel acts very much as a horse does with the colic, except the throwing of the head to the side.

Remedies—1. Make a decoction of one-half pound of hops and three pints of water, and give it as hot as you think the horse can endure.

2. The common garden beet is a popular remedy in almost any form of this disease. It should be prepared as follows: Boil a quantity, as if preparing them for the table; then boil the juice to nearly a sirup. Of this, give the horse from one-half to a pint twice a day. The worst cases have been cured by this remedy, when all other means had failed.

4. Persons who have used the following remedy say they have been uniformly successful in curing this disease: Steep one pound of hops in a half-gallon of water and give it as hot as the horse can bear it. It should be given twice a day. But it must be remembered that once the calculus has become imbedded in the neck of the bladder, only a surgical operation can remove the difficulty.

GREASE.

See Scratches.

GRUBS.

Symptoms—A thick round lump about the size of a raisin on the skin, but not painful on pressure, denotes that the larva of the gad fly has been deposited beneath the skin and is developing. These are usually deposited along the back.

Remedy—Make an opening with a penknife if necessary, and gradually squeeze them out. The grubs may generally be pressed out by using the thumbs well pressed down under the swelling, and with a firm and continued pressure upwards, the larva will spring out sometimes several feet distant.

HEAVES.

Symptoms—A cough which has a peculiar wheezing sound, somewhat resembling a grunt. The subject is a confirmed dyspeptic, having a voracious appetite, staring coat, large belly, spare muscles, dull, miserable look, drooping head, unwilling to travel fast, and when urged to do so soon becomes exhausted and "used up." These are the principal symptoms, and are common to both Heaves and Broken-Wind.

Remedies—1. It has been discovered that horse-radish is a good remedy for the heaves. It is to be given to the horse in his feed.

2. Parties living on the western prairies have almost a sure cure at hand by simply turning the horse out where rosin weed is plentiful.

3. Add indigo to water until it is blue, and give a two-gallon pailful two or three times a day. Old horsemen assert that they have never known a remedy to bear any comparison to this, in value, for curing heaves.

4. A remedy, which has effected many cures, is to wrap the bit of the bridle with tobacco leaves, and keep them on for weeks at a time. Moisten a plug of tobacco and from this separate the leaves, or use the natural leaf when it can be gotten.

5. Smart-weed is highly recommended for this 'disease. From one and a half to two pints of a strong decoction of it is to be given daily, for ten or twelve days. It may be mixed with the horse's feed. During this time he should be fed on cut or green feed. The former should be wet with water.

6. *Oil of tar is a reliable remedy for the cure of heaves. W. J. Flint, a veterinary surgeon and stock dealer of St. Louis, says in one of his publications, in regard to the oil of tar: "I have had a very large experience in treating this disease for the past twenty years, and have found this remedy to surpass all others. I have cured more than twenty cases of heaves with it without failure. I now regard it as an infallible remedy in this disease."* The ordinary dose is 2

teaspoonful every night, by pouring it upon the tongue, then giving some grain which carries it into the stomach. He says he has given very bad cases two or three tablespoonfuls at a dose with the best of results. To be had at all drug stores.

HOOKS.

Symptoms—The cords back of the eye are enlarged from inflammation and by contraction draw the washer out of its natural position, causing it to swell.

Remedy—The occasion being general inflammation of the eye, bathe with cold water. (See Inflammation of the Eye).

HOOFBIND.

Symptoms—This is similar to contraction of the hoof; *which see*.

Remedies—In the outer wall of the foot, all the way around the hoof, there should be made grooves, one inch apart. The shoe should then be made to circle so as to protect the heel, and should be bended, from the last nail-hole back, on the inside instead of on the outside. This is to spread the foot.

Then the hoof-ointment should be applied every morning, in the bottom of the hoof. This ointment is made as follows:

Take of turpentine,.....	2 ounces.
Sweet-oil,	2 “
Gum-camphor,	2 drachms.
Oil of spike,	$\frac{1}{2}$ ounce.
Corrosive sublimate,.....	2 drachms.

Apply twice a day with a sponge.

The horse's feet should be soaked in warm water at least three times a week.

HIDEBOUND.

Symptoms—This is a disorder of the skin produced by sympathy with the stomach. It rarely occurs in any horse but one out of health, from a deficiency either in the quantity or quality of the food. Sometimes it comes on in the latter stages of consumption or dysentery, without any previous mismanagement; but in the majority of cases, the cause lies in the food. The skin of a horse in health feels supple, and on his sides it may readily be gathered up by the hand into a fold; but in hidebound it is as though glued to the ribs, and too tight for the carcass.

Remedies—1. The state of the digestive organs must be carefully examined, and, if possible, rectified. A pint of linseed.

scalded, and mixed with a bran-mash every night, or scalded malt given in equal quantities with the corn; or in the spring time, clover or lucerne, will often do more than medicine. Give clean hay, free of dust. This together with proper attention and feeding of the horse will soon put him in condition.

2. The following will be found good for horses generally when out of condition. One gallon wood-ashes, three pounds salt, one pound sulphur, one pound rosin. Mix, dampen, put in trough and feed. This should be kept in the trough at all times, or where a horse can get to it, whether he be healthy or not.

3. Take two ounces of finely pulverized gentian-root, African ginger and licorice-powder, one ounce finely pulverized iodide of potassa and four drachms of tartar emetic; incorporate these materials well together in a mortar; then add half a pound of bruised linseed-meal; mix all thoroughly together again. Dose of the powder, one large tablespoonful, morning and evening, incorporated well through a mash composed of equal parts of bran and oats, properly salted. This is an excellent "Condition Powder" under all circumstances.

INFLAMMATION OF THE BOWELS.

Symptoms—The indications of this disease and colic are very nearly the same—yet there is one marked difference by which one can almost always determine. In colic there are frequent remissions of pain, while in this, when inflammation has fairly set in, there is little or no abatement of symptoms. The patient manifests tenderness or pain upon the slightest pressure on the walls of the abdomen. The belly is tense and drawn toward the hips. On moving, the horse often groans, and looks towards the flanks. When lying down he stretches at full length, throws back his head and paws with the fore feet. Sometimes he sweats profusely on the flanks and neck, champs or grinds the teeth, the nostrils are dilated and breathing hurried; the urine passes involuntarily, and the feces are hard and often covered with mucus; the eyes are bright and glassy, and the pupils are dilated, and in the last stages of fatal cases, cold sweat stands on the body, occasionally tremors set in, the limbs, ears, and lips feel cold and clammy, and death soon occurs.

Remedies—1. When satisfied that the case is inflammation, give a drench of one ounce of common salt in a pint of warm water. Give also frequent injections of three quarts of warm water with a handful of salt, until the bowels are relieved of the hardened feces—give also freely of warm water. Hot water in flannel bandages, applied to abdomen and frequently changed, will work wonders. When great pain is manifested, warm fomentations of hops will be of great benefit.

2. A dose of hop tea will be beneficial. Pour one quart boiling water on two ounces hops; when cool, strain and sweeten with honey.

3. Dilute tincture of arnica, one ounce to a pint of water, will lessen the pulse and moderate inflammation. During the acute stage, the diet should consist only of a slippery elm gruel—afterward hay-tea thickened with oat-meal may be allowed.

INFLAMMATION OF THE EYE.

Symptoms—Intolerance of light, so that the eye is kept half closed, by which it looks smaller than the other; a gummy secretion glues the lids together at the angles; eyelids slightly swollen, showing distended veins, with more or less watering. The internal surface of the lid is inflamed and the white of the eye often blood-shot.

Remedies—1. As soon as inflammatory symptoms appear, the horse should be kept free from annoyance of any kind. A cool stable, somewhat darkened, will be the most desirable place. A very light diet of scalded shorts, or gruel, will be sufficient until the inflammation is somewhat abated. An early and careful examination should be made, to see if the trouble is caused by any foreign substance getting or remaining in the eye. Local means to allay irritation must now be used. For this purpose many remedies are used. A favorite one is tincture arnica one ounce, water one pint. Bathe the eye several times a day, using a soft sponge. Bear in mind that the eye is a very sensitive organ and must be handled with great care and delicacy. The head should be sponged two or three times a day with cold water, as nothing equals water for inflammation.

2. Should the constitutional and local treatment be insufficient, a fomentation of slippery elm and marsh mallows will be of benefit.

3. If profuse secretion of fluid occurs, the following will prove of great benefit: Powdered slippery elm bark, two drachms; powdered bayberry bark, one drachm; hot water, one pint. Cool, strain and use as fomentation.

4. Should a "speck" appear on the eye, take tincture of bloodroot, one ounce, water one pint. Bathe the eye three times a day with this. Be sure some gets within the eyelids. If the "speck" be large and obstinate, the tincture alone must be applied with a camel's hair pencil.

INTERFERING.

Treatment—Buckle a round leather roll, stuffed with cotton, between the pastern joint and the hoof; buckle it so the ends

of the roll will come close together. This roll strikes the opposite foot, and will cause the horse to place his foot in a different position when he steps. In case "interfering pads," if used at any time, should rub the legs of the horse and make them sore, the following mode of shoeing will in most cases obviate the difficulty. For the hind feet have the shoes made considerably lighter on the outside than on the inside. Pare the feet slightly lower on the outside, leaving them the higher on the inside bar and quarter. Set the inside quarter of the shoes a trifle inside of the walls of the feet. Make the forward shoes light, with both bars of the shoe equal in weight and thickness. Pare the forward feet in the same way as above described for the hind feet, and fit the forward shoes close. If it is possible to stop the interfering by means of shoeing, the way herein described will be found efficacious.

ITCH.

Symptoms—Small local sores and falling off of hair surrounding them; rubbing.

Remedy—1. Give one teaspoonful of equal parts of black antimony and sulphur, once a day; at the same time reduce the daily allowance of food and put the horse on low diet. In a few weeks the sores will have disappeared, and the horse will be covered with a coat of new hair.

2. Wash the skin thoroughly twice a day with strong suds of Castile soap, and rub dry.

JAUNDICE, OR YELLOWS.

Treatment—This is not a disease, but a result of derangement of the liver in which the bile is returned to the system. If the appearance is connected with specific disease, the disease must be treated. If not, give of

Aloes..... 5 drachms.

Ginger 1 "

Gentian root (powdered).... 1 "

Powder and mix with enough soap to make a ball and give as a dose. After operation, as an alterative, take

Epsom salts..... 4 ounces.

Nitrate of potash 2 "

Linseed-meal 4 "

Mix and give a teaspoonful twice a day in soft feed.

LAMPASS.

Symptoms—An active inflammation of the ridges or bars in the roof of the horse's mouth. Generally most troublesome in the

young while shedding the coat. It, however, sometimes comes on from over-feeding with heating food after having been taken from grass. The mucous membrane of the roof of the mouth becomes so swollen and tender that the animal cannot eat dry food.

Remedy—Take a gum-lancet and lance the gums. After this is properly done, take a little fine salt and rub the gums with it. If the gum-lancet is not at hand, a common pocket-knife—which should be very sharp for the purpose—will answer equally as well as the lancet. With the knife make slight incisions through the prominence, or lance around the teeth, after which apply the salt as above directed and, where the lampass is unattended with any other local disease, the cure is made and the animal will recover his appetite immediately. Lampass should never be burned with a hot iron.

LOCK-JAW.

Symptoms—Mouth rigidly shut, one or both sides of the neck rigid; in the former case the head being turned to one side and in the latter stretched straight out; nostrils dilated, the eyes retracted with the brows thrust forward over them, and the countenance anxious and strained. Pronounced cases are difficult to treat.

Remedies—1. Chloroform is a means of arresting the progress of the disease. Use from one to three ounces, by taking a sponge and saturating it with chloroform, and keeping it close to animal's nose until he is under the influence of it. Then take:

Alcohol.....1 pint.

Capsicum.....1 ounce.

Make a mixture and rub his legs, and also his spinal column.

2. Give internally if possible three ounces of powdered lobelia seed and one pint of warm water; rub hartshorn over the face and neck; hold chloroform to the nose until the jaws open.

3. Soften two plugs of tobacco in warm water and apply them to the jaws of the horse. This has frequently been found to effect a cure when other means have failed.

LAMENESS OF STIFLE JOINT.

Symptoms—Heat and tenderness of the part; the limb is advanced with difficulty.

Remedies—1. Rest, with infusions of poppy heads, cold water, and sometimes a cathartic, will be the proper means of cure.

2. For chronic stifle lameness with adhesions, or infiltrations of the tissues, a few applications of acetate of cantharides will usually effect a cure.

3. Or take equal parts of powdered alum, honey and flour. Work to a paste and apply. Change every two or three days till a cure is effected.

For liniment, see page 538

LICE.

Remedies—1. The water in which potatoes have been boiled with their skins on is a good local remedy for lice on all domestic animals. In cooking potatoes use just water enough to cover them, and wet the infected animals with it when it is warm, not hot; one or two applications will be found effectual.

2. Rub into the roots of the hair white precipitate, in powder, taking care not to sweat the horse or wet his skin for some days afterwards.

3. Powdered stavesacre seed, two ounces, and water, one quart, boiled together for twenty minutes and well rubbed into the hair, will destroy the vermin; but the horse must not be allowed to lick himself.

4. Wash the animal thoroughly with sour buttermilk. It destroys the vermin and does not injure the horse. Repeat as necessity may require and blanket the horse until dry.

MANGE.

Symptoms—Mange is produced by a parasitic insect; also by contact with horses previously affected with the same disease. When caused by contagion, as certainly happens in the vast majority of cases, the first symptoms noticed will be an excessive itching of the skin, which is soon followed by a bareness of the hair in patches, partly caused by constant friction. This disease usually shows itself on the side of the neck, just at the edges of the mane, and on the insides of the quarters near the root of the tail. From these parts the eruption extends along the back and down the sides, seldom involving the extremities excepting in very confirmed cases. After a time the hair almost entirely falls off, leaving the skin at first bare and smooth, with a few small red pimples scattered over it. In process of time, the pimples increase in number and size, and from them a matter exudes which hardens into a scab.

Remedies—1. Dress the affected parts with a solution of carbolic acid in the proportion of half an ounce of the acid to a pint of water. If one dressing is not sufficient, after two days it should be washed off and another applied.

2. Another treatment is to wash the affected part with soap and warm water, with soda dissolved in it, after which apply a liniment composed of equal parts of oil of tar and oil of turpentine by

means of a brush, every second day for a week. Then wash off with soft soap and water.

3. The following remedy may be relied on as efficacious: Take of

Common sulphur.....6 ounces,
Sperm or train oil.....1 pint,
Spirits of turpentine.....3 ounces.

Mix and rub well into the skin with a flannel, or, in preference, with a painter's brush. In three days apply again, and the third time if necessary.

PNEUMONIA, OR LUNG FEVER.

Symptoms—During the accession and early stages of this disease, the animal inclines to quietude; is disinclined to move, and seems to have a dread of disturbance; stands with his head drooping, seems listless; the breathing is heavy and labored, and becomes more and more rapid as the disease progresses; the flank drawn inward and thrown out at each respiration; the pulse hard and full; the skin is hot and dry, except at the extremities, which are constantly cool. The animal is disinclined to lie down.

Remedies—1. Take one pint of salt and the yolks of six dozen eggs; beat these well together and rub all over the horse with the hand, so as to get it well rubbed into the skin. Cover the patient with two blankets. It will produce profuse perspiration. After perspiration ceases, remove the blankets gradually, remove the egg with curry-comb and brush after twelve hours, and feed with bran mashes and soft feed.

2. Give ten drops tincture aconite and same of gelsemium in a gallon of water, with the chill taken off. Cover with blankets. Repeat in three hours.

3. Give one drachm of tartar emetic three times a day, and two drachms of nitre, to increase the action of the kidneys. The diet should consist of a little hay, bran mashes, gruel and grass feed, if at the proper season of the year. The same general treatment will apply as for "Bronchitis," *which see*. In the early stage of the disease, rub the following liniment well into the surface of the body over the lungs:

Liquor ammonia.....2 ounces
Linseed oil.....2 "
Spirits of turpentine.....2 "

Mix and apply.

POLL EVIL.

Symptoms—A painful, soft swelling on the poll, accompanied by the same sensation of fluctuation, or changing under

pressure, as noticed under the head of *Fistula*. This is the same disease only as to its locality.

Remedies—1. To scatter poll evil take a handful of mandrake root, bruise and boil, strain and boil down until quite thick; then form a salve by simmering with enough lard for that purpose. Anoint the swelling every morning until it disappears, which it will do if applied while yet the swelling is new.

2. Another remedy is to take of

Gum-Arabic.....2 drachms

Caustic potash.....2 “

Extract belladonna.....2 “

Dissolve the gum in as small a quantity of water as possible; then add the potash and stir until dissolved, after which add the belladonna. Cleanse the sore with Castile soapsuds and inject into the pipes with a small syringe. Repeat every other day until a cure is effected, which will seldom fail to be done in a short period of time. If this does not relieve, cut open the pipes to the bottom and dress as directed for “*Fistula*,” *which see*.

RETENTION OF URINE.

Symptoms—This disease may be readily recognized by the frequent straining of the animal in the endeavor to urinate, and tenderness over the spinal column, in the region of the kidneys.

Remedies—1. Take one-half pound of hops, three drachms oil of camphor, grind and mix. Make into three pills and give one every day with a drench made of a small spoonful of saltpetre and two ounces of water. This remedy rarely fails to give relief.

2. In severe cases, caused by alkali waters, put strong mustard plaster on back above hips; rub with spirits turpentine when removed, and give two ounces of spirits of nitre.

3. The following are popular professional remedies for this disorder. Give as a dose:

Sweet spirits nitre.....2 ounces

Fluid extract buchu..... $\frac{1}{4}$ “

Holland gin.....4 “

Mix. Continue twice daily until the symptoms are relieved.

4. Balsam copaiba..... $\frac{1}{2}$ ounce

Sweet spirits nitre.....2 drachms

Flaxseed tea.....1 pint

Give as a drench.

5. Asafetida in the form of a pill the size of six marrowfat peas for a dose, given morning, noon and night.

RING BONE, AND SIDE BONE.

Symptoms—An enlargement of the leg, of a hard and unyielding nature, either immediately above the hoof, or a little

higher. In the latter, when thoroughly established, it surrounds the joint, whence the name, but in the early stages it appears at certain points from which it spreads all around.

Remedies.—1. Take of :

Tincture of iodine.....	4 ounces.
Cantharides.....	1 “
Mercurial ointment.....	2 “
Corrosive sublimate.....	1½ drachms.
Turpentine.....	2 ounces.
Lard.....	1 pound.

Mix well together.

Cut the hair off the part affected, and after applying the ointment rub well with the hand. After two days grease the part with lard, and after four days more wash with soap and water and apply the ointment again, and repeat every four days.

2. *It has been discovered that lead will effectually cure any case of ring-bone, even though of years standing. Take a soft piece of lead or lead pipe about two-thirds of an inch in diameter, putting the round side next to the foot. It should be long enough to extend around above the enlargement. Bind the ends with soft copper wire. The lead should bear on the ring-bone quite loosely, and be worn five or six weeks.*

See also remedies under “Spavin,” and applicable to Ring-bone.

RHEUMATISM.

Symptoms—Most frequently attacks the muscles of the shoulders or of the loins, sometimes both parts are affected. The symptoms are lameness and inability to use the part. If the shoulder is affected, the foot is not put to the ground, and when the leg is moved backwards and forwards by the hand, great pain is evident. In severe cases there is fever, and in a short time the part swells and becomes excessively tender.

Remedies—Cut half a dozen lemons in thin slices. Steep them in one quart of water. Care should be taken not to boil while steeping. Bathe the affected parts with this solution three times a day. Bandage with flannels. Press the juice from two lemons. To this add as much water as there is lemon juice, and drench the horse with it. Repeat this twice a day. Parties who have used this remedy for years, pronounce it the most positive cure they have ever found for this disease, in either acute or chronic form.

2. In severe or long-continued attacks give an ounce of bi-carbonate of potash, followed daily by a dose of half the amount; with half an ounce of nitrate of potash. If this remedy fails, two drachms of iodide of potash may be given in addition. In animals which either from previous attacks or constitutionally are

predisposed to this disease, the greatest care, in addition to maintaining the system by good feeding, should be taken to have them dried and cleaned immediately after their being taken from work. The ill effects of allowing horses to stand and get chilled after exercise cannot be too carefully guarded against.

SADDLE-GALLS.

To prevent saddle-galls the saddles should be lined with some smooth hard substance. Flannel or woolen cloth is bad. A hard-finished, smooth rawhide lining, similar to those of the military saddles, is preferable. Then, if the saddle is properly fitted to the horse's back, there will be no galls unless the horse is very hardly used. Galls should be washed with soap and water, and then with a solution of three grains of copperas or blue vitriol to one tablespoonful of water, which will harden the surface and help to restore the growth of the skin. White hairs growing upon galled spots cannot be prevented.

SCRATCHES, OR GREASE.

Symptoms—Scratches or Grease, is sometimes an aggravated form of chapped heels. At others, it is ushered in by constitutional symptoms, feverishness and hidebound. The first local symptom is slight swelling of the skin of the heels and adjacent parts, which soon cracks, and the fissures exude an offensive serous discharge, which inflames every part it touches and spreads the eruption. The leg continues swelling till a remedy is applied.

Remedies—1. Wash the parts twice a day with Castile-soap and water, followed by an application of blue vitriol-water. This is usually sufficient to cure this difficulty.

2. Kerosene oil applied once a day for three or four days, is reputed a cure.

3. After the inflamed skin has been subdued by applications of carrot poultice, take alum 4 ounces, boiling water, 1 pint; wash the affected parts thoroughly twice a day.

4. In the case of confirmed grease, with icherous swelled limbs, give internally 4 to 6 drachms aloes in a pint of water and apply the following twice daily after cleaning. Acetate of lead 1 ounce, sulphate of zinc, $\frac{1}{2}$ ounce, water 1 pint. If the parts become grapey apply a solution of sulphate of zinc.

SNAKE BITES.

Remedies—1. Give the horse, as soon as possible, two to four quarts of whisky and apply clay made into a mortar, for twelve

or fifteen hours and renewed occasionally. Whisky enough must be given to bring the animal completely under its influence.

2. Immediately after the infliction of the wound, apply saleratus moistened and bound on the bite. If considerable time has elapsed open the wound with a knife previous to applying. This is an effectual remedy.

SPAVIN.

Symptoms—Inflammation and exudation of the bony substance from a tumor in the region of the hock; or accumulation of lymphatic humors in the same region. At first the animal seems to be afraid of freely using one or the other of the hind legs, and a little lameness is perceived at the commencement of moving. Afterwards, when returned to the stable after an exertion, the horse stands upon the toe of the affected limb; limps considerably on turning about and when commencing to walk; after walking a little the lameness disappears, and is only perceived again after the horse has been standing a few minutes. At this period we begin to notice a swelling in the region of the hock, accompanied by increasing lameness or complete stiffness; this swelling is either hard and bony, or soft. We distinguish several varieties of spavin, according to locality and character.

Remedies—1. Use the following blister after reducing the inflammation with fomentations of hot water.

Corrosive sublimate..... $\frac{1}{4}$ ounce,

Spanish flies..... $\frac{1}{4}$ ounce

Alcohol..... $\frac{1}{2}$ pint.

Apply to the parts affected and a blister being raised, grease with lard daily until healed, and then again blister and so continue until a cure is effected. Ordinarily a few applications will be sufficient.

2. Foment the spavin twice daily, for half an hour each time, with a lye made by dissolving one ounce of sal-soda in one gallon of hot water; apply with a sponge, as hot as the animal can bear it without causing distress. The lye should be kept at the same temperature during each fomentation. All lye material should be carefully but thoroughly removed from the surface of the skin when drying the parts immediately after each application. A sweating-blister should be applied every night over the region of the spavin, and well hand-rubbed into the surface of the skin immediately after the parts have been fomented and dried as above described, until considerable irritation is produced on the surface of the skin. Then the use of the blister should be omitted for three days and applied again in the same way. The blister is composed of one ounce each of tincture of cantharides, oils of turpentine, origanum and spike, two drachms of finely pulverized corrosive subli-

mate, three ounces each of raw linseed oil, camphorated oil, tincture of opium and one pint of alcohol. Incorporate these well in a bottle and the blister is ready for use. The fomentations must be perseveringly applied twice daily as above described during the blistering, and for several days after the use of the blister is wholly discontinued.

Feed your horse on mash-food, which should consist of equal parts of sound bran and ground oats, with half a pint of bruised flaxseed-meal added, properly seasoned with salt, morning and evening. Make each mash with cold water. The remainder of the food should be grass. This treatment will be found as efficacious as any and will leave no scar or blemish behind it, provided it is used according to directions.

3. The following is a good liniment for bone and blood-spavin. Take of

Oil of spike.....	1 oz.
Oil of amber.....	$\frac{1}{2}$ "
Spirits of turpentine	2 "
Nitric acid.....	$\frac{1}{2}$ "

The acid must be put into the bottle last. Apply thoroughly and it will remove the lameness, though not probably the bunch. If the horse has reached the age of four years, fit a bar of lead just above the swelling and twist or wire the ends together, so that it will constantly wear upon the enlargement. The two together will often cure a case in six or eight weeks.

See also Remedies under head of "Ringbones," used also for Spavin.

SPLINT.

Symptoms—A callous or bony tumor, growing upon one of the splint bones, and is often, but not always, accompanied with some lameness during its formation. The lameness is caused by local irritation and inflammation.

Remedies—1. Procure a probe-pointed, narrow knife, shaped like a scimitar, with the cutting edge on the convex side. A small opening is made in the skin about an inch below the splint, and just large enough to admit the knife, which is then introduced and pushed upwards with its flat side towards the skin, till it reaches the tumor, when the convex edge is turned toward this, and several extensive scarifications are made in the periosteum covering it, after which the knife is withdrawn and a fine seton-needle is introduced in its place, and passed upward until it reaches above the splint when it is pushed through, and the tape drawn out, and properly secured with a bandage. Of course the horse must be cast and properly secured before resorting to the knife. In the course of ten days, or a fortnight, the tape may be withdrawn, and the splint will almost invariably disappear.

2. In most cases the operation is unnecessary, and the application of the following blister will have the desired effect: Take of biniodide of mercury, 1 drachm; lard, 1 ounce. Mix, and after cutting the hair short, rub a little into the skin covering the splint, every night, until a free watery discharge is produced from the surface. To facilitate this the leg should be fomented with very warm water every morning and afternoon, and this should be continued for several days after the ointment has been discontinued. If, after a week's interval the splint does not appear much reduced in size, the ointment should be re-applied, and repeated at similar intervals till the swelling is removed.

STAGGERS.

Remedies—1. This is a stupid condition occasioned by engorgement by eating too much green or other food, liable to fermentation. When discovered, put the horse in a safe place and give immediately of aloes, 6 drachms; raw linseed-oil, 1 pint. If it does not operate in twenty-four hours, give injections of warm water and soap. There is another form of staggers, allied to apoplexy, and dangerous because due to pressure of blood on the brain, a horse often becoming unmanageable in harness. Throw cold water over the head, first releasing the harness. A horse subject to this should never have the collar, headstall or other portions of the harness obstruct the free circulation of the blood.

2. *Cause the horse to inhale into his nostrils an even teaspoonful of snuff. This is an infallible cure for the staggers in any stage of the disease, as long as there is life in the animal.* The diet should be confined to a small amount of good hay or grass, with a plentiful supply of water.

STRAINS.

Symptoms—Strains are caused by overstretching of or mechanical injury to the muscles, ligaments and tendons. Symptoms; heat, swelling and pain on pressure or in movement, in the one case by flinching and in the other by lameness. Sometimes effusion of blood or serum.

Remedy—1. Foment the affected limb with a lye made by dissolving two ounces of sal-soda in a pailful of hot water. Apply the lye with a sponge as hot as it can be borne, twice daily for one hour each time; keep your lye to this temperature of heat during each fomentation; dry the parts fomented each time from all the lye material, and bathe them with a strong infusion made of either wormwood or hops (use whichever of these is the more convenient) and pure cider vinegar steep the hops or wormwood in

the vinegar, and apply as hot as it can be used, immediately after each fomentation, and hand-rub well in; then cover the limb with flannel. This treatment, if thoroughly persevered in, with rest from all work added, will generally prove efficacious in a very short time. Feed no corn or other heavy grain, whole or ground, while your animal is under treatment. Oats and bran and carrots or Swedish turnips, with good sound provender, properly seasoned with salt, are the kinds of diet that should be fed the animal until a full recovery takes place.

2. Eight ounces spirits of turpentine, eight ounces good vinegar, one egg. Mix, shake well, and bathe twice a day with the naked hand. This applies to curbs, splints, strains and bruises of all kinds.

SWEENY.

This is generally the result of injury, either to the shoulder or the limb. The muscles fall away from disease. See under head of "Sprains," and treat as there directed. Then exercise will again cause the muscles of the shoulder to resume their normal proportions.

RUBBING THE TAIL.

Symptoms—The cause of this difficulty usually originates from worms. Many are mistaken in thinking it is a humor of the tail, when it is only the worms that irritate the rectum.

Remedies—1.—Inject a solution of sulphuric ether. If this does not allay the irritation, it is simply an irritation of the anus, and it needs to be greased thoroughly with citrate ointment.

2. If the difficulty be really worms, the following will be found useful: Take four tablespoonfuls of turpentine and one pint of linseed oil. Give as a dose. This will usually afford relief in this difficulty. A change of diet is always desirable. Salt in the manger is beneficial. Worms, however, notwithstanding the temporary clearance effected by medicine, are apt to re-appear after a time. In this case repeat. It is always quite safe to do so after the lapse of a week or ten days after the first dose.

STRING-HALT.

Symptoms—String-halt is a nervous disease, its origin not well known; there is no absolute cure for the disability, but it may be alleviated by the following remedies:

Remedies—1. This difficulty has been relieved by the use of goose-oil. It is to be applied to the muscles thoroughly two or three times a day.

2. Sweet oil has been used in the same way with success.

THUMPS.

Symptoms—This is a spasmodic action of the heart from over exertion, and is distinguished by the throbbing.

Remedies—1. Ordinarily there is no permanent cure for this disease, although the animal can be relieved to a great extent, by placing five drops of aconite on the tongue, and if the horse is not relieved by the first dose, repeat the dose at intervals of one hour until there is a change for the better perceived.

2. Give the horse two or three quarts of strong brine, then bleed in the third bar of the mouth. Give the brine while bleeding. The object is to relieve the nervous system.

3. The following is one of the best remedies known:

Take whisky, 2 ounces; sweet spirits of nitre, $\frac{1}{2}$ ounce; nitrate of potash, 1 drachm, in a teacupful of water. Repeat every half hour until the horse has recovered.

THRUSH IN FEET.

Symptoms—The direct cause of thrush is neglect and oversight in the management of the hoof. Its symptoms are a fetid odor, combined with morbid exudation from the frog and softening of the same.

Remedies—1. Apply twice a week, as long as it is found necessary, a charcoal-poultice made of three parts finely pulverized charcoal and one part of bruised flaxseed meal, mixed with warm water. Use the poultice at night. After removing it in the morning, dress between the clefts of the frog with pyroligneous acid and fine table-salt mixed. Be careful to press the acid and salt down to the very bottom of the cleft of the frog at each dressing, morning and evening. The safest plan to adopt in cases of this kind is to treat the disease both locally and constitutionally. For the constitutional treatment take equal parts of finely pulverized sassafras-root, lac-sulphur, gentian-root, ginger, charcoal and salt; incorporate well in a mortar. One ounce daily is a dose.

2. Wet thrush is brought on by excessive wet or standing in wet stables, causing the frog of the foot to decay. Dry thrush is the result of extreme dryness. To cure either, take equal parts lard and spirits of ammonia; fill the bottom of the foot with this and heat in with hot iron. Thrush almost always causes the foot to contract, for which use the hoof-ointment; see "Hoof-biud."

URETHRAL GLEET.

Symptoms—This is simply an augmented secretion of mucous matter from the urethra, not contagious or communicable by contact.

Remedies—Take of the following:

Balsam copaiba.....	2 oz.
Sweet spirits of nitre,.....	1 oz.
Sirup of garlic,.....	4 oz.
Mucilage of gum Arabic,.....	1 pt.

The dose is one-half gill daily.

The sheath and penis should be sponged three times a day with cold, soft water, and the horse kept from mares. The same remedies are efficient for leucorrhœa in mares, in which cooling applications are injected into the vagina. Cleanse the vagina thoroughly with injections of tepid water, and inject once a day, sulphate of zinc, 2 drachms, in 1 pint of tepid water. Follow this once a day with the following injection: Carbolic acid, 2 drachms; tepid water, 1 pint.

WARTS.

Remedies—1. Touch over the entire surface of the wart twice daily, morning and evening, with a lotion composed of one drachm of nitrate of silver dissolved in one ounce of soft water. Apply with a camel's hair brush until the wart disappears, which will probably take place in two or three weeks' time.

2. Take equal parts of calomel and copperas, mix and apply dry. This is also good in indolent cases of sore neck, back, shoulder, etc.

3. To cure a blood-wart, wash it twice a day with a solution of blue-vitriol, after which sprinkle some of the same pulverized upon the wart, and in due time it will be removed.

WENS.

Remedy—Take a half-teacupful of slaked lime and the same amount of soft soap; mix well and apply to the wen, in such manner that it cannot spread. From two to four applications will generally effect a cure. The wen should be lanced at the time of making the application, or a day or two after.

WORMS.

Symptoms—A rough, staring coat, a craving appetite—more or less emaciation—the passage of mucus with the feces, and

often a small portion of this remains outside the anus and dries there. That part generally itches, and in the attempt to rub it the tail shows the effect of that action. This last symptom may be caused by vermin in the tail, or by irritation of the anus from other causes; but all these symptoms combined, quite clearly indicate worms in the intestines.

Remedies—1. Give a teaspoonful of pulverized alum in each feed, for six feeds; this will usually remove worms.

2. Common salt, 2 ounces, infusion of wormwood, 1 quart, use as a drench, for several days in succession, when the worms will be removed.

3. Linseed oil, 1 pint

Spirits of turpentine, 2 teaspoonfuls.

Mix and give every morning until the worms are expelled.

MOUNTAIN FEVER.

Symptoms—This disease seems to be peculiar to the Northwestern Territories, and on account of resemblance of some symptoms, is sometimes called Pink Eye, but is not the regular disease so named. The horse affected shows signs of drowsiness, carrying the head low, ears often drooping and spreading apart. In walking the animal takes short steps, appearing to walk on the toes. The most noticeable features are weakness of the back or spine, showing derangement of the kidneys. Sometimes the sight is affected, and a horse will attempt to jump when led over a flat board, as if it were a gate.

Remedies—1. An application of spirits of turpentine, on the small of the back and behind the ears, has been found effective in curing many cases. A half-ounce of spirits of nitre given internally will add to the effectiveness of this measure.

2. A decoction or tea of willow-bark, given as a drench, is a favorite remedy in many localities.

3. Take about two pounds of green sage brush, (such as grows on the plains), chop or bruise; add one gallon of water; boil to about one pint, and give as a dose one gill, three times a day. Continue till the fever abates. The worst cases in the state of Oregon have been cured by this remedy.

4. Take one tablespoonful of turpentine and mix with five tablespoonfuls of castor oil. Of this give a tablespoonful (in severe cases two tablespoonfuls) in half a pint of hot water, as a drench. Administer three times a day.

5. In Washington, Oregon and Idaho, the salts of Medical Lake, Wash. are considered a specific for this disease.

SUPERIOR LINIMENTS.

Cuts and Wounds of all Kinds—One pint of alcohol, half-ounce of gum of myrrh, half-ounce aloes; wash once a day.

Rheumatic Liniment—Take croton-oil, aqua ammonia, f. f. f., oil of cajeput, oil of origanum, in equal parts. Rub well. It is good for spinal diseases and weak back.

For Indolent Cuts or Wounds—Take fish-worms mashed up with bacon-oil, and tie on the wound.

To Make the Hair Grow—Milk of sulphur one-half drachm, sugar of lead one half drachm, rose-water one-half gill; mix and bathe well twice a day for ten days. This is a popular remedy, but a good means is careful and clean daily grooming.

Liniment for the Stifle-Joint on a Horse—One ounce oil of spike, half-ounce origanum, half-ounce oil amber. Shake it well and rub the joint twice a day until cured, which will be in two or three days. But the limb must be so held in position that the horse cannot thrust it back.

Saddle or Collar-Liniment—One ounce of spirits of turpentine, half-ounce of oil of spike, half-ounce essence of wormwood, half-ounce of Castile soap, half-ounce gum-camphor, half-ounce sulphuric ether, half a pint of alcohol. Wash freely.

Liniment for Strains and Growth of Lumps—One ounce oil of spike, half-ounce origanum, half-ounce amber; aquafortis, and sal-ammonia of each one drachm, spirits of salts one drachm, oil of sassafras half-ounce, hartshorn half-ounce. Bathe once or twice a day.

Ointment for Calks and Bruises of the Feet—Take of: Lard, 1 pound, rosin, 2 ounces, beeswax, 3 ounces. Melt together and add one ounce of powdered verdigris and one-half pound of tallow. Stir it all until it gets cool, and apply. It is excellent for bruises, calks, etc.

Sore Shoulder and Back of Horses—1. Wilt the leaves of jimson (*stramonium*) and apply to the affected parts and it will cause them to heal readily, even when the horse is used every day.

2. The following is a good liniment for curing these difficulties: Sweet oil, 2 ounces, gum camphor, 1 ounce; mix and apply twice a day.

Sweet Clover Ointment—Take 5 ounces lard, 3 ounces white wax, 3 ounces rosin, 1 pint cider vinegar and 4 quarts of sweet clover leaves and blossoms. Boil the vinegar and clover together until the strength is extracted from the clover. Strain through a cloth; then add the other ingredients and boil until clear. Then pour carefully into shallow pans, and when cool, cut into 1½ inch pieces and wrap in tissue paper. Excellent for abrasions, cuts, burns, piles, etc.

Sprains and Swellings—Take one and a half ounces of

hartshorn, one ounce camphor, two ounces spirits of turpentine, four ounces sweet oil, eight ounces alcohol. Anoint twice a day.

For Colic in Horses.—Dissolve four ounces of sugar in two quarts of hot water. Drench the horse with it while it is as hot as it can be borne. Should the horse, in any case, not be relieved in 20 or 30 minutes, repeat the dose, one dose though will usually effect a cure.

BLOOD PURIFIERS.

Blood Purifier—Dry red-clover blossoms, and make a strong tea of them. Give a pint of this to the horse twice a day. This, likewise, is one of the most effectual remedies known for the purification of the blood of man as well as beast.

Horse-Powder—This condition powder has a wide reputation for distemper, hide-bound, colds and diseases which may arise from impurity of the blood. Take one pound comfrey-root, half-pound antimony, half-pound sulphur, three ounces saltpetre, half-pound laurel-berries, half-pound juniper-berries, half-pound angelica-seed, half-pound rosin, three ounces alum, half-pound copperas, half pound masterwort, half-pound powdered charcoal. Mix all to a powder and give in most cases one tablespoonful in mash; feed once a day until cured. Keep the horse dry, and keep him from cold water six hours after using it.

MISCELLANEOUS.

To Prevent Snow-Balling—Clean the hoofs well, then rub thoroughly with soft-soap before going out in the snow.

To Extricate Horses from Fire—Put the harness on a draught-horse, or the saddle on a saddle-horse, and they may often be led out without difficulty. Throw a blanket or coat over the head of the animal if practicable.

To Break a Halter-Chewer—This may be done by making a strong solution of Cayenne pepper, and soaking the halter in it. The animal will soon learn not to chew this kind of a halter.

To Distinguish Shoulder from Foot Lameness—Take the animal by the bridle-bits and back him; if the lameness is in the shoulder, he will drag his foot as he backs; but if it is in the foot, he will lift it up from the ground as he moves.

Another way to locate lameness, is by the motions of the horse when in a brisk trot; when he is lame below the knee, he will bow his head downward, and when lame above the knee, he nods his head upward.

For Knee-Sprung Horses—Also galls, sprains, sores, etc.: Take fresh angle worms and put them in a vessel for twenty-four hours, until they become clean; then put them in a bottle and throw plenty of salt on them; place them near a stove and when dissolved, apply freely to the parts affected.

Warbles, or Slight Tumors—These are successfully treated by a solution of salt water four or five times a day. An essential treatment is to remove the cause of the irritation. The horse should, if possible, be exempt from work for a week or two. The stuffing in the saddle or other article of equipment should be looked to, and if necessary altered.

Sand for Bedding—Dry sand is not only an excellent substitute for straw, for horse's beds, but superior to straw, as the sand does not heat and saves the hoofs of the horses.

Easy Mode of Drenching a Horse—A drench may often be successfully administered in the following manner: Standing on the right side of the horse, with the bridle in the left hand, keeping the horse's head down in the natural position, introduce a long-necked bottle, containing the medicine, into the side of the horse's mouth, and pour out the medicine only as fast as the horse will lap or swallow it. Where this simple means fails, see page 504.

CATTLE.

CARE AND MILKING OF COWS.

Good Milking Habit—Cows should always be treated with gentleness, especially when young or when the teats are tender, in which case the udder ought to be handled with the greatest gentleness; otherwise the cow will be in danger of contracting bad habits and retaining her milk ever after. A cow never lets down her milk pleasantly to the person she dreads or dislikes.

Wrong Method of Milking Cows—Many cows are ruined by bad milking. Too frequently, through carelessness and want of thoroughness, individuals will cause the usual quantity of milk to shrink one-third in two weeks.

In milking they will seize the root of the teat between the thumb and forefinger, then drag upon it until it slips out of their grasp; this, together with the rude way of using the teat and udder, and their ill disposition to the cow completes the injury.

To Cure Cows of Kicking—Kicking is sometimes caused by sore teats, tender bag, the milker pulling the long hairs on the bag, or his having long, sharp finger-nails. In such cases, shear off the long hairs and cut off the long nails; bathe the chapped teats with warm water and grease them well with lard, and if they do not heal readily, or if it is a very severe case, apply

equal parts of glycerine and tannic acid, mixed, and it will cure the difficulty very promptly. Another important consideration is to always treat your cow gently. If you find that she has a bad temper—and the kicking originates from this cause, then bend the fore-leg so as to bring the foot up to the body; then put a small strap around the arm and small part of the leg, near the hoof, crossing between so as not to slip off over the knee, and buckle. In this condition she cannot kick, and it is a good way to subdue her. Never confine the hind legs, singly or together, for in doing this there is danger of spoiling the animal. Never whip or abuse a cow in any case.

Parsnips Good for Milk—Parsnips cause cows to produce abundance of milk, and they eat them as freely as they do oil-cake, and the milk is very rich. Sheep, when lambing, fed with them, produce much milk.

To Increase the Quantity of Milk in Cold Weather—Slightly warm the water given to the cow, and to this add one quart of bran to two gallons of water, and a little salt. Give at least this amount three times a day. It will increase the amount of milk of many cows twenty-five per cent. Never give them slops from the kitchen.

Fattening Calves—Calves will thrive better on milk that is not exceedingly rich in butter, than on that which is. The reason of this is, the nutritive elements of milk are chiefly in the caseine, and not in the butter-making properties.

If you have a cow that gives rich milk and one that gives a quality poorer in butter, it is better to feed the calf on the milk of the latter. The calf will thrive better, and you will get more butter from the milk of the first cow.

The following is an excellent food for calves: Take nearly the quantity of skimmed milk the calf can drink and add two handfuls of oatmeal boiled to a thick mush in water. When milk-warm, mix with it the skimmed milk, and feed it to your calf.

Drying a Cow of Her Milk—It is often necessary to dry up the milk when cows are wanted speedily to fatten, and this is now and then found to be a difficult matter, especially with large and gross beasts. If the flow of milk is suffered to continue, it may overload and produce inflammation of the udder, or garget, or general fever, or inflammation of the lungs, or foul in the foot.

Alum in the form of whey, or dissolved in water, will be the most effectual. The whey can be prepared as follows: Take alum one-half ounce, water two quarts; boil them together for ten minutes and strain. Give for a dose.

Holding the Milk—Laying a wet rag on the back of the cow that holds her milk is a very good remedy. Another writer says a weight laid on her back, as a bag of earth or sand, will often make her give her milk.

BLACK-LEG OR ANTHRAX.

How to Prevent this Fatal Disease:—Anthrax or Black-leg is now known to be due to a germ or living spore that finds its way into the system of healthy young animals, and once in, breeds so fast as to cause death within a very few days, sometimes hours. Real Anthrax, or Splenic Fever is due to a germ slightly different from the "Black-leg" germ but otherwise the diseases are similar and need to be treated alike. The great French physician and chemist, Louis Pasteur, discovered this germ and also discovered how to render its attacks nearly harmless. The disease attacks most often cattle, next sheep, then horses or mules, goats and hogs. Sometimes man takes it, for it is very contagious. Where it once gets a start animals die off very fast. In one season, in 4 months, 970 animals died in 5 counties in Illinois. In New Jersey 222 died in one county in one month.

When an animal once has genuine Anthrax it is always fatal; the only thing to do is to either burn the carcass at once or bury it so deep that even worms can't find it. Bury it only a few feet and the carcass will infect the neighborhood for 9 or 10 years. The fodder that grows over its grave will carry the disease.

Symptoms:—In the most acute stage the animal dies at once as from apoplexy, but usually it shows a high fever; dull eyes; great weakness; stops feeding; sometimes trembles. Later, uneasiness appears, spasms, kicking and pawing; hard breathing; mouth and nostrils open; rectum and nose and mouth become bluish; animals moan and discharge bloody offal. Sometimes swellings appear.

Treatment:—When the animal has Anthrax or Black-leg kill it at once and burn it or bury it deep, very deep, and at once inoculate all the rest of the herd unless they have been inoculated within two years.

Preventive:—*Black-leg can be prevented by vaccination just as easily and as surely as Small-pox in children can.* In France vaccination reduced the average death rate from Black-leg from 10 in 100, to 1 in 200; in Germany from 5 in 100 to less than 1 in 500; in Switzerland they had even better results.

How it is Done:—Two injections of virus must be made ten days apart. The first of very weak, the second with a stronger virus. The virus can be bought already for use with syringe for injection.

The injections are made either on the side of the tail, or behind the ear, or in the shoulder. The animal need not quit work, the cow may be milked and the milk used right along. The operation is easy and harmless. The cost is from 10 to 15 cents a dose, and the quantity used varies with the different shipments of virus. Each package contains the proper amount for a dose of *that* virus. It varies from 4 to 20 drops.

A Home Method Without Virus:—If Black-leg is suspected and virus cannot be obtained, an older method of setoning the dewlap is advisable and often arrests the disease at the outset and prevents it. It consists in passing a seton needle crosswise through the dewlap

and leaving in the wound a piece of tape knotted at both ends so it can't come out but will keep the wound open. The tape and the wound must be dressed with ointment made as follows: one ounce of turpentine, one ounce of sulphuric acid, eight ounces of cotton-seed or linseed oil. Mix thoroughly and keep the wound dressed with it for four or five days.

Accessory Treatment:—When Black-leg is at all about give each animal with its salt ten per cent. of Hyposulphite of soda for a few days. Also keep the pastures well drained. The first and worst cases always happen on the poorly drained lands, and the next on pastures where sheltered nooks or hollows—where water stands—has formed a suitable place for the germ to thrive and become virulent. Many cattle that are thought to have died from eating poison herbs on hillsides really died of Black-leg or Anthrax.

DISEASES OF CATTLE.

Garget in Cows.

This is swelling of the teats and udder of the cows, caused often by not being milked or not having been milked clean.

Common poke used is one of the best local remedies known. Mix a handful of the dried leaves with the food, and prepare an ointment by simmering a quarter of a pound of the dried root with a pound of lard for two hours. This is to be used on the udder after fomentation from one to two hours with water as hot as can be borne, and then thoroughly drying. Rub in with as much friction as can be borne.

One pint of bean meal, mixed with other meal or mill-feed, given to a cow twice a day, for two or three days in succession, is a good local remedy for garget. In place of the bean meal, the beans may be cooked soft, and fed in like manner. This is simple, but found to be a very efficacious application.

Choked Cattle.

1. A strong solution of salt water, used as a drench, will often relieve this difficulty.

2. Another mode of relief is to cause the animal to jump over as high a barrier as possible.

3. Another method, that will often cause the obstruction to be ejected from the throat, is to discharge a gun or revolver, holding the muzzle between the horns and a little forward of them.

4. A flexible rod, with a knob on the end, may force the obstruction down into the paunch.

Scours in Cattle.

Boil a quantity of wild cherry bark for an hour or more. The quantity of water should be sufficient to keep the bark covered while boiling. Soak corn, oats or barley in this liquid and feed it or drench. It has proved one of the best remedies in use for this disease.

Scours in Calves.

Give a raw egg and repeat the dose twice a day. It can be administered by holding the tongue and pouring it down the throat. This is an excellent remedy.

Bloody Murrain or Black Leg.

1. Drench the animal twice a day with a teacupful of salt and as much vinegar. No water should be given for ten hours after the drenching process.

2. Dissolve a tablespoonful of saltpetre in a pint of water. This should be given at one dose. Give two doses the first day and one dose every succeeding day, until the cure is complete. This has been successfully used after all other means had failed.

3. If bad, first bleed in the foot or leg affected. Then cut a hole in the skin just above the soreness, insert a strong solution of saltpetre water and work it down over the soreness with the hand. Let this and the corruption out by cutting a hole in the skin below. When black leg makes its appearance the whole herd should be moved to a high, dry pasture.

4. To prevent murrain in cattle during its prevalence, give them every three days one tablespoonful of salt and two of slaked lime. Remove to high and dry place.

To Remove Warts on Cows' Teats.

Warts may be removed by cutting them off with shears; and this is not a very painful operation for the cow. Large warts may be removed by twisting a piece of fine wire sufficiently tight around the wart to obstruct the circulation of the blood; and they will, in due time, drop off. Warts should not be removed while cows give milk.

Bloody Milk.

Give a teaspoonful of sulphur in a little dry bran once a day, and in severe cases it may be necessary to give it twice a day.

Swelled Bags.

Simple inflammation is usually very readily removed when caused by cold and exposure, by dissolving one-half ounce of pulverized camphor-gum in two ounces of sweet-oil over a slow fire, and applying twice a day.

To Destroy Lice.

1. Take of

Coal-oil $\frac{1}{2}$ pint.

Lard $\frac{1}{2}$ "

- Melt, mix and apply. It will effectually kill all lice.

2. Camphor-gum dissolved in spirits will remove lice from animals.

3. They may be removed by dipping the teeth of the curry-comb or card into coal-oil, and keeping it moist with it while currying or grooming the animal.

Remedies for Foot Rot.

This disease makes its appearance sometimes between the claws of the foot, often in the heel, and, extending up the leg,

causes extreme lameness, loss of flesh and loss of milk. It often runs through a whole dairy, and its appearance is becoming every year more common.

1. Make an ointment of lard and red precipitate, one part of the latter to four of the former, to be applied to the affected parts and rubbed in; or in bad cases, when the disease is in the heel and upon the leg, it is worked in by holding a hot iron near the foot. The foot should be cleaned before the application, by washing well with soap and soft water. One application, if thorough, will generally effect a cure; but if all parts are not reached by the ointment, a second application should be made in forty-eight hours.

2. Take one teacupful of the best vinegar, two teacupfuls of salt, one and one-half teacupfuls of copperas. Dissolve on the stove, but not boil. When cool, apply to the affected parts once or twice a day. Two or three applications usually cure.

Chronic Diarrhea in Young Calves.

Probably no better remedy can be found for the relief of this difficulty than a raw egg to which there is added a teaspoonful of black pepper, given twice a day. This should be followed by food composed of a little milk and water, thickened with a handful of oatmeal.

Mange, or Scurvy.

Give one teaspoonful of sulphur once every two days, and in extreme cases, one tablespoonful. This is not only a cure for these disorders, but it is considered a preventive of black-leg when prevalent.

Hoven, or Bloat in Cattle.

1. When cattle become bloated from eating clover or other green feed, they can often be relieved in the following simple way: Insert into the mouth a stick about two inches or more in thickness, and fasten to the head in such a manner as to keep the mouth wide open. The passage from the stomach being thus uninterrupted, the gas will be immediately discharged from it, and the trouble will cease. The stick should be placed crosswise in the mouth, and fastened each end to a horn by a cord. This simple means is better than any internal remedy, and much better than to pierce the paunch of the beast.

2. Instead of the usual method of stabbing in the side, give a dose of train-oil. This has been often tried with a successful result. The quantity of oil must be adapted to the size and age of the animal. For a grown-up beast, of average size, the right quantity is about a pint.

3. When an individual is provided with a small rubber hose, a cure can be very readily effected by inserting this through the mouth into the stomach.

Spanish Fever.

Stockmen in the State of Texas pronounce the following a successful remedy for the cure of this disease: One-half pint of castor-oil, two ounces of sweet spirits of nitre, and fifteen drops of croton-oil, to be taken at one dose, as a drench, and to be repeated daily. One dose usually is sufficient to check the fever.

After-Births.

Browned or parched oats, fed before and after calving, is said to prevent trouble that the cow may otherwise have in voiding the after-birth.

Bronchitis.

Bronchitis consists in a thickening of the fibrous and mucous surfaces of the trachea. The disease is indicated by a dry, husky, wheezing cough, laborious breathing, hot breath and dry tongue.

Apply to the throat warm poultices of slippery elm or flaxseed, on the surface of which sprinkle powdered lobelia, moderately warm; if they are too hot they will prove injurious. Administer the following drink: Powdered liquorice, one ounce; powdered elecampane, one-half ounce; slippery elm, one ounce; boiling water sufficient to make it of the consistency of thin gruel. If there is difficulty in breathing, add half a teaspoonful of lobelia to the above, and repeat the dose night and morning. Linseed or marsh-mallow tea is good in this disease. The animal should be comfortably housed, and the legs kept warm by friction with coarse straw.

Inflammation of the Throat.

In many cases, if attended to immediately, nothing more will be necessary than to confine the animal to a light diet, give frequent drinks of linseed tea, and supply warmth and moisture locally by a slippery-elm poultice, which can be kept in close contact with the throat if secured to the horns.

S H E E P .

CARE OF SHEEP AND LAMBS.

Keep sheep dry under foot. This is even more necessary than roofing them. Furnish them an ample supply of water during the

winter months, as well as other seasons of the year. Begin feeding grain with the greatest care, and use the smallest quantity at first. Never frighten sheep if possible to avoid it. Separate the weak sheep from the rest of the flock, in order to give them special attention. If a sheep is injured, wash the wound; if flies are troublesome, apply spirits of turpentine every day or every second day to the wound. Cut tag-locks early in the spring.

DISEASES OF SHEEP.

Remedies for Scab.

1. Mix one part of linseed-oil with two of coal-oil. Apply thoroughly every third day for three times. This will cure in ordinary cases.

2. If bad, the following dip is one of the best: Tobacco and sulphur, of each one pound; water, five gallons; or in this proportion to make enough so that each sheep may be dipped in it. Boil the tobacco in the water until the strength is exhausted; add the sulphur. Dip in the solution up to the eyes, holding the sheep in for three or five minutes, pressing the wool from time to time. It must not get in the eyes, mouth or nostrils. Scab is violently contagious and a pasture once infected should not be used for at least a year.

3. The application of spirits of turpentine and a decoction of tobacco is a superior remedy for the treatment of this disease. A farmer thus relates his mode of applying the remedy: "I purchased a flock of 150 fine wool sheep which were afflicted with this disease. After they had been shorn their backs were covered with scabs and sores. I had a large kettle sunk partly in the ground as an ex-tempore vat, and an unweighed quantity of tobacco put to boiling in several other kettles. The only care was to have enough of the decoction, as it was rapidly wasted, and to have it strong enough. A little spirits of turpentine was occasionally thrown on the decoction, say to every third or fourth sheep dipped. It was necessary to use it sparingly, as, not mixed with the fluid and floating on the surface, too much of it otherwise came in contact with the sheep. Not attending to this at first, two or three of the sheep were thrown into great agony and appeared to be on the point of dying. I had each sheep caught, and its scabs scoured off by two men who rubbed them off with shoe-brushes, dipped in suds of tobacco and soft soap. The two men then dipped the sheep all over in the large kettle of tobacco water, rubbing and kneading the sore spots with their hands while immersed in the fluid. The decoction was so strong that many of the sheep appeared to be sickened either by immersion or by its fumes. The effect on the sheep

was magical; the sores rapidly healed; the sheep gained in condition, and a new wool immediately started; I never had a more perfectly healthy flock on my farm."

To Cure Foot-Rot.

1. Salt will materially assist the cure of this disease. It is given freely in their feed, and sprinkled on the grass they eat.

2. Another remedy is to take potash, four ounces; arsenic, four ounces; water, one gallon. Boil till dissolved. When you discover that sheep have become lame, pass them through a trough holding a warm solution containing the proportions of the above. The amount to be used will depend on the number of sheep to be treated. Let your trough be twenty or twenty five feet long, and just wide enough to admit one sheep walking after the other. Keep in it about three inches deep of the solution. Two thousand sheep can be run through in a few hours, and this will result in a cure.

3. A popular remedy for this disease is a solution of blue vitriol. It is poured from a bottle with a quill in the cork, into the hoof, when the animal lies on its back. But this method is imperfect, because, without remarkable care, there will always be some slight ulcerations which the solution will not reach. A flock-master gives the following as his method of using this remedy:

"I had a flock of sheep a few years since which were in the second season of the disease. I bought a quantity of blue vitriol and made the necessary arrangements for paring their feet. Into a large washing tub in which two sheep could stand, I poured a solution of blue vitriol and water as hot as could be borne by the hand even for a moment. The liquid was about four inches deep in the bottom of the tub, and was kept at about that depth by frequent additions of hot solution. As soon as the sheep's feet had been thoroughly pared, it was placed in the tub and held there. A second one was prepared and placed beside it. When the third one was ready, the first one was taken out, and so on. Two sheep were thus constantly in the tub, and each remained in it about five minutes. The cure was perfect. There was not a lame sheep in the flock during the winter or the next summer. The hot liquid penetrated to every cavity of the foot, and doubtless had a far more decisive effect, even on the uncovered ulcers, than would have been produced by merely wetting them."

Cure for Grubs.

A remedy for this difficulty, during the proper season, July and August, is to smear the nose of the sheep with tar. The sheep can be made to do this themselves by feeding them their salt sprinkled over tar, once a week.

The sheep gad-fly, which produces the grub, is led by instinct to deposit its eggs within the nostrils of the sheep. Its attempts to do this, usually in July and August, are always indicated by the sheep, which then collect in close clumps with their heads inward and their noses held close to the ground, and thrust into it if any loose dirt or sand is within their reach. If the fly succeeds in depositing its egg, it is soon hatched by the warmth and moisture of the part, and the young grubs or larvæ crawl up the nose, finding their way into the head of the sheep. During the ascent of the larvæ, the sheep tosses its head violently, and often dashes away from its companions wildly over the field. The odor of the tar on the nose of the sheep will usually keep this fly at bay.

Remedy for Scours.

In scours the bowels are continually passing watery stools. The treatment found successful, is as follows: Take four ounces raw linseed oil, two ounces of lime-water; mix. Let this quantity be given to a sheep on the first appearance of the above disease; half the quantity will suffice for a lamb. Give about a wineglassful of ginger tea at intervals of four hours, or mix a small quantity of ginger in the food. Let the animal be fed on gruel or mash of ground meal. If the above treatment fails to arrest the disease, add half a teaspoonful of powdered bayberry bark.

Remedies for Founder.

In this disease, the animal becomes slow in its movements; its walk is characterized by rigidity of the muscular system, and when lying down, it requires great effort to rise. The cause of this difficulty is exposure to sudden changes in temperature, feeding on wet lands, etc.

1. The following remedy will be found good: Powdered lady's slipper root, 1 teaspoonful, to be given every morning, in a pint of warm pennyroyal tea.

2. If the malady does not yield in a few days, take powdered sassafras bark one teaspoonful, boiling water one pint, honey one teaspoonful; mix, and repeat the dose every other morning.

3. Give pulverized alum in wheat-bran. Great care in changing from dry to green feed should be exercised.

Colic or Stretches.

1. A decoction of thoroughwort or boneset, given warm, is usually an effectual cure.

2. Attacks of this disease come readily to some sheep. It can always be prevented by giving green feed daily, or even once or twice a week. Its cause generally is costiveness.

3. Half an ounce of epsom salts, a drachm of ginger, with a teaspoonful of essence of peppermint. will speedily relieve the sheep of this difficulty. The salts alone, however, will generally effect a cure, as will an equivalent dose of linseed oil or hog's lard.

4. Give a strong tea of red peppers. Dose, one-fourth of a pint. Follow this by giving the sheep exercise; such as running them around the lot or field for eight or ten minutes.

Sheep are occasionally seen, particularly in the winter, lying down and rising up every moment or two, and constantly stretching their fore and hind legs so far apart that their bellies almost touch the ground. They appear to be in much pain, refuse all kinds of food, and not infrequently die unless relieved. This disease is popularly known as the "stretches," but it is doubtless a sort of flatulent colic induced by costiveness, which the above remedies will speedily relieve.

To Cure Catarrh.

Immerse a small feather in spirits of turpentine, and insert it into the nostril of the sheep. Twirl it around once or twice before withdrawing it. Ordinary cases will be cured with one application; more severe ones by two or three, to be applied at intervals of two or three days. Keep the sheep well housed.

To Cure Lameness.

Examine the foot, clean out between the hoofs, pare the hoof if unsound, and apply a wash of carbolic acid.

To Protect from Dogs.

If sheep are kept in the same lot with cattle, dogs will seldóm disturb them; for as soon as a dog approaches, sheep will run to the cattle and these will drive the dog away.

To Prevent Jumping.

Clip the eyelashes of the underlids with a pair of scissors. This, it is said, destroys the ability and disposition to jump, and the animal will not again make the attempt until the eyelashes are grown.

To Mark Without Injury to Wool.

To thirty spoonfuls of linseed oil, add two ounces of litharge and one ounce of lampblack; unite them together by boiling, and mark the sheep therewith.

HOGS.

CARE AND TREATMENT.

Keep your hogs in good clean fields; give them access to pure water—even though you should be compelled to dig a well for that purpose; a good pump and plenty of suitable troughs, cleansed every week, will cost but little and will always prove a valuable outlay. Provide also, in the dryest part of the field, a good shelter, both from sun and rain. And by no means allow them to sleep on old straw or manure. Leaves or dry ground make healthy beds. In troughs, near by their resting-place, once each week place a composition of salt, soda and red pepper. To four parts of the first article add one part of the latter. Our common red peppers will do very well; they should, however, be well pulverized, and all the ingredients thoroughly mixed. Most healthy animals will readily devour salt. To obtain it they will also take the alkali and the stimulant. It is not offered as a patent remedy, but simply as a preventive of the injurious effect of the foul gases and pestiferous filth in which hogs wallow. Exclusive grain feeding has a tendency to produce cholera; therefore other kinds of food should be employed in connection with grain. Among the best are artichokes and turnips. Hogs should have free access to mud and water. They seem to be natural disinfectants.

Stone-coal or charcoal should be kept where they can have free access to it.

DISEASES OF HOGS.

Unfailing Cure for Cholera.

At a meeting of stock breeders and farmers of Iowa, held at West Liberty, Mr. J. S. Long, of Jasper County, referring to hog cholera, said he would give some experience that would be of value to all. Years ago he lost thousands of dollars' worth of hogs; but for six years he had not lost any; and he had a remedy which, if any one would use, he would warrant they would lose no more hogs, provided they did exactly as he said, and the hogs were not past drinking so they could not take the medicine. He had tried it in hundreds of cases, and never had a failure; was now engaged in buying lots of hogs where cholera prevailed; bought 250 recently, and found no trouble in curing them. His remedy is this: "Make concentrated lye into good soap by the usual rule; take one

pail of the soap to fifty hogs, put in a kettle, add water and two pounds of copperas, boil it, then add dish water or milk (or anything to make it taste good) till you have about what the hogs will drink. Place enough of the mixture, while warm, for twenty-five hogs to drink in troughs in a separate lot. Just as you are ready to let the hogs in, scatter two pounds of soda in the troughs; the object is to have it foaming as the hogs come to drink. Be sure that every hog drinks, and if he will not drink, put him in the hospital; if you cannot get him to drink, then knock him in the head, for he will give the cholera to the rest. After twenty-five have had all they will drink, let in twenty-five more, and continue till the whole are treated. The next day I go through with the same operation. After the second day, skip a day; then give for two days, and you may turn them out cured. I generally give the same dose once a week to my hogs. An important point is to make the hog drink, and if he will not take it in any other way, add new milk or put in sugar." As an evidence of his entire faith in his remedy and mode of administering it, Mr. Long offered "to pay ten cents a pound for every hog he could not cure, provided the hog was not past drinking."

ANOTHER—To cure this disease, take of

Sal-soda.....	2 pounds.
Sulphur.....	1 "
Saltpetre.....	$\frac{1}{2}$ "

This will make four doses for forty head; to be given night and morning.

ANOTHER—Turnips have been found a specific for hog cholera, and should be fed once a day. Those who have used them say they never fail to cure.

PREVENTIVE—To prevent hog cholera take one peck of charcoal, one pound of cape-aloes, one pound of rosin, one pound of sulphur; mix and keep in the bottom of the trough.

To Prevent Trichinæ.

To prevent trichinæ from infesting your hogs, it is necessary to remember that the most likely sources of the parasite are the animal offal and garbage which they eat when allowed to run at large, and the rats they are apt to devour when they can get at them; in illustration of which fact it may be mentioned that the hogs in Ireland, which are allowed much more liberty of wandering, and less regularly fed than their cogeners in England and Prussia, are more apt than these others to present the trichinæ upon microscopic investigation. It is therefore advisable to keep hogs intended for human consumption in clean sties, containing only one or two each, and impervious to rats, or else keep them in clean pastures. If the animals are kept in pens they should be plentifully fed with sound grain, milk, etc., watered, and allowed some salt occasionally; in

other words, placed in good hygienic conditions, and excluded from diseased food. It may, perhaps, seem unnecessary to dwell upon the value and necessity of measures which commend themselves at once, as affording not only the best safeguard against the special disease under notice, but as going far towards prevention of other diseases to which the hog is subject; yet in view of neglect, and even positive abuse, with which hogs are treated throughout the land, it is well that breeders should understand the fearful consequences liable to result from carelessness, which, in matters of such vital importance, is closely allied to criminality.

Preventive of Disease.

Mr. A. V. Moore, the eminent Illinois breeder of Poland Chinas, says, in his *Swine Journal*: "For all general purposes of health, and as a preventive of disease, I have for many years used the following mixture with uniform and marked success. Take one bushel of charcoal, small pieces, three bushels wood ashes; one half bushel slaked lime; one-fourth bushel salt; two pounds Spanish brown; five pounds sulphur; one-fourth pound saltpetre; one-half bushel copperas. Pulverize the last two thoroughly; mix all in a bin, box or barrel, and keep in an open trough, where the hogs can have free access to it, and keep well moistened with good swill or milk. If your herd is not large, or you lack a sufficient amount of some of the ingredients, mix smaller amounts of each in the same proportion. Aim to keep these articles at hand at all times, and do not neglect their use; they contain certain chemical elements which are wanting in every hog predisposed to disease. You will observe by careful watching, that the animals that look the worst, and with which, as you say, 'there seems to be something the matter,' are the ones that will call on you to fill this trough the oftenest, and they will usually visit it, either as they go to or return from their feed."

ANOTHER TREATMENT—If hogs are not in a healthy condition, put two or three pounds of sulphur in a barrel of mill feed, and make a slop of it; of this feed them once or twice a day, and with a clean, warm pen for winter and a clean, dry, cool place for summer, there will be no mortality among swine.

To Cure Mange.

1. A thorough application of vinegar, followed in a day or two after with a wash of soap and water, will cure this difficulty. The application should be made over the whole surface of the body.

2. In lieu of the vinegar, a decoction of tobacco, in the ratio of one to twenty five, is likewise effectual. Whenever this disease is treated, it is essential to purify all objects with which animals come in contact; thus all rubbing-places and sties should have a cov-

ering of lime. The sties should be cleaned out entirely, or the hogs removed for a few months to a new pen.

Diarrhea or Scours in Pigs.

1. For pigs, a week or so old, that are severely afflicted with this disease, dissolve a lump of alum (the size of a walnut) in a quart of water, and of this give a teaspoonful evening and morning. It will soon afford relief.

2. This disease can generally be checked by feeding the sow on dry corn for a few days. Skimmed sweet milk to be fed the sow is also good.

If pigs are large enough to eat, give them rye, corn or wheat, whole. As a rule in this disease, no medicine will be required if proper attention is given to the mother. Changing her food, allowing her to go out into the air, keeping the pigs in the pen warm and comfortable, will in ordinary cases check the disease. For the treatment of this malady, see also Sheep Scours.

Cure for Rheumatism.

The indications that the hog is afflicted with this disease are manifested by a dullness, indisposition to move, followed by extreme lameness in one or more of the limbs, and swelling or tenderness of the joints or muscles.

Give a tablespoonful of cod-liver oil to each hog, in its food, once or twice a day. This oil also improves the condition wonderfully. A cure will be more rapidly effected by giving boiled or steamed food and sour milk. Provide a warm house, from which the hogs shall have egress to the yard as well.

Cure for Blind-Staggers.

This almost invariably originates from too high feeding. In order to cure the difficulty it is necessary to withhold the food from the hogs for a day or two, and feed them very small quantities of sulphur and charcoal.

ANOTHER—Sour apples, mashed into a pumice and fed twice a day, are said to be an effectual remedy for the cure of this disease. See that the pores in the forelegs are kept open. This is done by rubbing them with a corn cob and soapsuds. This is also remedy for fever.

Cure for Cough.

Feed hogs afflicted with cough all the oats they will eat, three times a week. This will loosen their bowels, and the cough will disappear, as it is usually caused by costiveness. Cleanliness, warmth and wholesome, nutritious food are likewise valuable aids in abating this disease.

Heaves or Thumps.

1. These difficulties are usually preceded by a cough, which is generally worse in the morning, when hogs first come from their beds. Almost any case can be cured by putting a spoonful of salt well down the throat of the animal. Repeat once, every two days, until three doses shall have been given, though usually one dose will perfect a cure.

2. Tar is an old remedy for this disease, and one that has been employed very successfully by many farmers. The mode of giving it is to take a small quantity of tar (nearly the bulk of an egg) and put it well down in the mouth. This should be done for three successive mornings. If the disease does not yield to three doses, dissolve one pint of tar in a gallon of water, and use one quart as a drench, repeating the dose every morning until a cure is effected.

Rot in the Tails of Young Pigs.

The tails of young pigs frequently drop or rot off, which is attended with no further disadvantage to the animal than the loss of the member. The remedies are, to give a little brimstone or sulphur, in the food of the sow, or rub oil or grease daily on the affected parts. It may be detected by roughness or scabbiness at the point where separation is likely to occur.

Soreness of the Feet.

This often occurs to hogs that have traveled any distance, the feet often becoming tender and sore. In such cases they should be examined, and all extraneous matter removed from the foot. Then wash with weak lye.

To Remove Lice.

1. Boil tobacco (leaf-tobacco if you can procure it) until you have a strong decoction, and add enough of grease or lard to make a thin salve; apply thoroughly and in one day there will be no vestige of these vermin left.

2. Put one gill of kerosene oil into a dish. With a woolen rag or paint brush, rub the oil up and down the back of the animal, and behind the forelegs and on the flanks. This will clear off the vermin in two days.

3. An agricultural paper says buttermilk is an infallible remedy for ridding hogs of lice. It should be poured along the hog's back and neck. Two or three applications will generally prove sufficient.

Cure for Worms.

1. For swine that are troubled with worms, mix wood-ashes with soap-suds, and feed once a week with slops.

2. In reference to the cure of kidney-worms an old farmer of La Salle County, Illinois, writes: "This disease has prevailed very extensively here, but we now have a certain cure, namely; one tablespoonful of turpentine poured on across the loins or small of the back, every day for three days. I have never known it to fail, even when the hogs had been down for weeks, unable to rise."

FOWLS.

SELECTION OF BREEDS.

In the selection of fowls the breeder must have regard to the purpose for which the stock is principally destined, and also to the facilities for keeping. If it is desired to raise fowls for the table or market, it would be manifestly injudicious to procure birds which are egg-yielders rather than producers of choice meat for the table, and if fowls are to be kept for profit, the demand of the most available market will indicate whether they can be kept for eggs or for flesh to the best advantage. . But for whatever purpose kept, the breed should always be pure, to arrive at the best results.

Adaptation to the Soil—The poultry-raiser must bear in mind the soil he has when making the selection of his stock. Fowls will thrive upon sandy or gravelly soil without difficulty under most all circumstances; some birds, but not all, will thrive where the land is clayey. Upon land that is wet or low-lying and subject to overflow and saturation to any great extent with water, ducks and geese are the only fowls which should be kept. The birds which will thrive best on damp, cold or clayey soil are Minorcas, Cochin Chinas, Plymouth Rocks, Scotch Greys, Leghorns, Langshan, Andalusian, Game, Brahmas and Houdans. Those which will not thrive upon damp land are the Creves, Dorkings, LaFleche, Polish and Spanish. On dry and sandy soils all breeds thrive.

The Most Prolific Layers—In poultry keeping for the eggs, those fowls are most desirable which are called "non-sitting" breeds. They are not only the most prolific layers, but they save the breeder much trouble by their absence of inclination to hatch. The "non-sitters" are the Andalusians, Hamburgs, Houdans, Leghorns, Minorcas, Polish and Spanish. Of these the best layers are the Hamburgs, and the others are graded according to their laying capacity in the following order: Leghorns, Andalusians, Houdans, Spanish and Polish. The eggs of the Hamburgs are too small for market, and the eggs of the Spanish and Polish have a tendency to be frail and are more liable to breakage. Therefore the breeder will find it to his advantage to confine his choice to the remaining breeds

given, and all of these he will find most desirable producers of eggs which will be of good size, and therefore command a good price in the market. These birds have strong constitutions, and can be reared with success, unless the place be particularly wet. Moreover, they can be crossed (not inbred) with advantage, the progeny being also certain to turn out good layers.

Best Fowls for Fattening—Where it is desired to select fowls that will fatten readily, and market to good advantage, the breeds to select from are the Creve-Cœurs, LaFleche, Dorkings, Plymouth Rocks, Houdans and Langshans. The Game fowls are especially fine for the table, but their size renders them unprofitable for ordinary marketing. A cross breed from the Dorking and the Game is very successful, producing a fowl that is very delicate, for the table, with flesh very deep at the breast.

Adaptation to Space—The breeder should always consider the choice of breeds of fowls in relation to the room he has for their exercise, as some breeds will not thrive without plenty of roaming room. Minorcas and Leghorns can be kept on limited runs, while the Hamburgs and Spanish will not lay well unless they have plenty of freedom for action. Fowls that are confined in limited space must not be fed too highly or they will lay on fat, and cease to become layers.

HOW TO RAISE CHICKENS WITH PROFIT.

Early Feeding—The young chickens having been cooped, where they can be kept clean and dry, and can, if possible, have a run at a grass plat, the question of food arises. For the first few days a hard boiled egg chopped up finely may be given to the little chicks. Then cooked meat finely minced should be given till they are three weeks old. The cost will be slight as a piece the size of a walnut will suffice for a whole brood, while this food strengthens the system. This is to be given in addition to oatmeal moistened with milk or water, which will form the staple article of food for one week, when it may be changed for shorts and barley meal, shorts and buckwheat meal, or bran and Indian meal; potatoes mixed with bran are also good food. A little grain may be given occasionally, and food should be given at night. Bread and water is the worst food that can be given, as it causes weakness and produces diarrhea. Green food occasionally is necessary, more especially for young fowls. Shelter is absolutely indispensable, and the brood should only be let out in bright or at least clear and dry weather.

Fattening Fowls for Market—At four months old, if the fowls are of the breeds recommended, and have been well fed, they will be well enough grown for the table. The young bird should be shut up for a fortnight, and the confinement will be found to have added at least two pounds to the weight. They should be

put in cages, each compartment about 9 x 18 inches, and a foot and a half high. The bottom should be of bars about two inches apart, rounded off, the sides and top of board, the birds being placed so they cannot see each other. A tray under the cage should be filled with fresh dry earth every day to receive the drippings. The cage should be thoroughly whitewashed every time fresh occupants are put in. The fowls should be fed constantly during the two weeks.

What and How to Feed—The food should be administered by having a little shelf in front of each pen or coop to hold the food and water tins. Give water once a day and food three times a day. Darken each coop after feeding by hanging a cloth over it for half the time between feeding; this ensures quiet and thorough digestion. Do not allow food to remain and sour, but give each bird as much as it will eat at one time. Buckwheat meal is the best food for fattening, the best substitutes being Indian meal and barley meal. A little minced green food each day will keep the bowels in order. The fattening process will be completed in from two to three weeks.

It must be borne in mind that the object is chiefly to add fat. The flesh and growth must have been arrived at before putting up for fattening.

Pulverized Bones for Fowls—Burn the bones white, when they can be easily pulverized. Then mix with corn or oatmeal, and feed once a day. Place them where the fowls can have access to them easily.

To Fatten Turkeys—Mix finely pulverized charcoal with their feed, and turkeys will fatten more rapidly and their flesh will be superior in tenderness. Mashed potatoes and meal are good articles to feed turkeys, and to mix the pulverized coal with.

To Fatten Fowls in a Short Time—Mix together ground rice well scalded with milk, and add some coarse sugar. Feed them with this, but not too much at once.

The Prime Secret of Profitable Poultry Raising is in getting the birds ready for the table at the earliest possible moment, and not letting them live a day afterwards. Every day after sufficient fat has been acquired the birds become feverish and waste away. There must be prompt killing as soon as the fowls are ready.

To Produce Extra Fat—If extra weight and fat are wanted, the fowl should be crammed during the last ten days of fattening, but not before. Roll moistened meal into pellets an inch and a half long, and the size of the finger. Moisten in water and put into the bird's throat. There will be no difficulty in swallowing and the quantity must be learned by experience. Chickens must be fasted at least twelve hours before they are killed.

HOW TO KILL CHICKENS.

There are various ways of killing fowls. One is to give a sharp blow with a small but heavy stick, just behind the neck, about the second joint from the head, which, if properly done, will sever the spine and cause immediate death. Another is to wring the neck, which is effectual because it breaks the neck. The French method is to pull the joints apart, taking the head in the right hand, the left holding the neck with the thumb at the back of the head. Cutting the throat involves no pain beyond the insertion of the knife. The bird should be hung by the legs head downward. A long, narrow sharp-pointed knife is then thrust through the back part of the roof of the mouth, causing instant death.

To Secure Plumpness After Killing—Pluck the fowls immediately after killing them, while they are warm. They should be scalded by dipping an instant into boiling water. This process will make the birds look plump and nice. They should not be drawn until the day they are wanted, as they will keep much longer in this way.

TO RAISE FOWLS PROFITABLY IN LIMITED SPACE.

The advantage of an extensive territory over which fowls can roam, picking up grubs, worms and earth, is well-known, and its desirability is such that many believe fowls cannot be raised profitably otherwise. This is not altogether correct, as the breeder or producer can supply any deficiency in this regard and give his fowls all the advantages desired in this respect, by observing the following simple expedient.

Let him build a pen or rack, say four feet square, by timbers nailed together and set upon the ground, the sides being slatted by narrow strips nailed to the frame, with a space of six or eight inches between. Inside this frame prepare a compost bed of earth, manure and mill-sweepings, shorts or bran, placing first a layer of two or three inches of manure; then a layer of earth or rich loam; upon this a layer of the mill-sweepings, each the same thickness, and continue thus till the rack is filled. This bed will be the constant breeder of meal-worms and grubs, which naturally seek the light and coming to the edge of the rack will become the prey of the fowls, which will pick at the compost bed for this food, and thus get the richness which comes from it. In this way fowls will thrive as well as if they had the privilege of an extensive run.

Continuous Laying Secured—Hens supplied in this way will lay all the year round in many instances, and the profit thus simply and cheaply attained will be much larger upon the money invested than relatively on that expended upon extensive breeding farms.

TO MAKE HENS LAY.

To one and a half gallons of boiling water add two ounces of lard, two teaspoonfuls of common salt and one of Cayenne-pepper. Stir the mixture thoroughly; then, while boiling, stir in equal proportions of corn and oatmeal until a thick mush is formed. It will be well to taste the feed in order to see that you do not have an overdose of pepper or salt in the preparation. This feed is not to be given the fowls all the time; a change occasionally is necessary; and on days when it is omitted, give them about one-half an ounce apiece of fresh meat, chopped fine. At all times keep a good supply of gravel, lime and pure water convenient to them. It is said that feeding them on red peppers, or mixing it with their feed and giving it to them two or three times a week, increases the capacity for laying very materially.

ANOTHER—Another mode that is highly recommended for making hens lay, is to keep them separated from the rooster; give each half an ounce a day of fresh meat, chopped up like sausage-meat, from the time insects disappear in the fall until they appear again in the spring, and never allow more than one egg to remain in the nest as a nest-egg.

The Laying Capacity—A hen is said to have the capacity of laying about 600 eggs during her life, and no more. A few the first year; about 300 to 350 the next three; the balance from the fifth to the ninth year inclusive. Therefore, it is not profitable to keep hens after their fourth year. By feeding proper and stimulating food as above given, hens can be made to lay the quantity of eggs with which they are endowed in much shorter time than if left to "scratch for themselves."

In order to raise chickens successfully, the male birds should be replaced with new blood once every two years.

EGGS.

To Test the Freshness of Eggs—When it is desired to test good and fresh eggs, put them in water; if they float well out and the large end turn up, they are not good. This is a reliable rule to distinguish good from bad eggs. A fresh laid egg will sink in water.

How to Preserve Eggs—Fannie Field, an authority on fowls, says in *Prairie Farmer*, on the subject of how to keep eggs:

"The best known way to keep eggs through hot weather, or any other weather, save when one has the advantage of cold storage, is to pack them, small end down, in salt. They may be packed in a nail keg, or in anything else that is clean and handy, the only requisites being that the eggs be perfectly fresh, clean, and do not touch each other or the sides of the package. Keep them in the

coolest place you have, but do not turn the package over at all; the eggs will keep longer if left undisturbed. I have kept eggs thus packed from the middle of April until the middle of September in a cellar where the temperature ranged from 50° to 60°, and they were good, every one of them, at the expiration of that time. Chaff, bran, ashes, sawdust, etc., are liable to make the eggs 'taste,' especially if there be any dampness in the place where the eggs are kept; and according to my notion the chaff is about the most objectionable packing material that could be used, for it is liable to give the eggs a 'musty' flavor that is 99 per cent more disagreeable than a 'piney' taste."

DISEASES OF FOWLS.

Remedy for Roup.

To cure the roup, when a bird is attacked with the characteristic cough of the malady, or has tenacious mucus about the beak, with difficulty of breathing, place it in a wicker-coop in a quiet shed, and put before it a drinking fountain containing about a gill of water with which is mixed one drop of solution of aconite, third potency (may be had of any Homœopathic physician). In every instance this treatment has an effect almost marvelous, the symptoms disappearing in an hour or two. The attack for a day or two is liable to return, yet each time in a lighter form; but continuing the medicine will completely remove the ailment in about forty-eight hours. In case the disease should have made so much progress before it is observed that the sufferer is unable to drink, it will be necessary to give the dose. This is easily accomplished by pouring into the throat about a teaspoonful of the water every hour.—*Financiers' Journal*.

Another treatment for roup, a contagious disease, is to separate the well from the sick and place them in clean quarters. If sick fowls get worse kill and burn them. The housing place should be disinfected by being shut up and thoroughly fumigated by burning sulphur and tar together in an iron pot, to produce a thick smoke. Continue this for two hours. Of course the fowls must be first removed. Each sick fowl should have a tablespoonful of castor oil. The nostrils should be washed out by inserting the pipe of a small syringe in the slit in the roof of the mouth, charged with one part of chloride of soda to two parts of water. Three hours after giving the oil prepare the following: Piperine, one-half drachm; balsam copaiba, one-half ounce, and licorice powder, one-fourth ounce; mix; divide into thirty doses and give twice a day.

Chicken Cholera.

This disease may be epidemic, and contagious. The same means for disinfection, and destroying bad cases, should be observed as given for roup.

A good remedy is to feed raw onions, chopped fine, mixed with their food, about twice or three times a week. A remedy published by the Department of Agriculture, is alum-water; three or four teaspoonfuls of it are to be mixed with their feed and given daily. This is reputed to cure the very worst cases.

ANOTHER remedy is:

Spirits of turpentine.....2 teaspoonfuls.

Sulphur.....1½ ounces.

Bran or meal.....1 quart.

Mix. Feed once a day. It is usually an effectual cure for this disease.

A correspondent's letter to the *Ohio Farmer* says: "Cholera was very bad here last spring, and I will tell your readers how we cured it. For every forty fowls we took a piece of asafetida the size of a hickory-nut, broke it in small pieces and mixed it in about a pint of cornmeal, wet it thoroughly with boiling water, and placed it near the roosting place, so that the chickens could eat of it the first thing in the morning. If they were not unable to eat, a cure was certain."

For Drooping Wings.

Take crude petroleum and apply a little underneath the wings of the fowls and on their beaks and it will soon remedy this difficulty. This drooping originates from vermin, which the oil will remove.

To Exterminate Lice.

Lice or vermin on fowls can be very readily removed by sprinkling kerosene oil on the roosts and nests. Or, a better plan is to tack a narrow strip of cloth on the top of the scantling on which they roost and then sprinkle the oil on this. Another good means is to sprinkle sulphur on the ground where they dust themselves. To make roosts of sassafras poles is also recommended. The binders or roosts may be sprinkled with Scotch snuff. If the hen spider—a minute louse—infests the hen house, fumigate with burning sulphur and tar, and whitewash all surfaces with lime slaked with dilute carbolic acid.

Cold and Catarrh.

Give pulverized red or Cayenne pepper, in soft feed, every day or two until relieved. Keep your fowls on dry, elevated places, if possible.

Putrid affections are prevented by occasionally mixing pulverized charcoal with the food of chickens.

To Cure Gapes.

When taken in the first stages, camphor will relieve this difficulty. Give a portion, the size of a wheat-grain, daily, and put camphor in the drinking water. Spirits of turpentine will often accomplish the same purpose. It may be given in meal. At the same time improve the deficiencies of diet and shelter your fowls; a want of which are the causes of this difficulty. In very severe cases of gapes, if it is desirable, they can be relieved by introducing a loop of horse-hair into the windpipe, and turning it around during its withdrawal; this will bring out the worm, the cause of this difficulty. Frequently it is necessary to repeat the operation in order to extract all the worms. Small portions of dough mixed with soft-soap, given once or twice, is reputed a cure for gapes.

To Cure Egg-Eating Hens.

This habit can be often cured by breaking an egg, sprinkling the contents with Cayenne pepper, and turning the egg around so as to get the pepper below the yolk; after which place the egg in the nest or where the hen will get it. It is seldom that the dose will have to be repeated. Hens very seldom, if ever, eat their eggs when they are properly supplied with lime, gravel and animal food. If the habit cannot be broken, put up the hens addicted to the vice and fatten them for the market or table, else the whole flock may become addicted to the habit.

THE APIARY.

CARE AND MANAGEMENT OF BEES.

Bees as an Investment—It is a question whether or not in many localities the culture of bees may fairly be considered as strictly a branch of agricultural industry; that is, one which can be advantageously pursued in connection with other sources of profit which belong to the farm. To keep bees successfully requires an intimate acquaintance with the science of bee-culture, and an expenditure of care, time and patience, for small results, which few farmers can well afford to spare from more important pursuits. Where bee farming is conducted on an extensive scale, it has been known to prove very profitable; but on the other hand, the number of failures is so great in proportion, that the result of experience may

be said safely to point to the conclusion, that there is more risk and uncertainty about such an enterprise than is to be found in the other avenues of industry and enterprise open to the agriculturist, and that no one should undertake it without ample capital, and the services of an experienced and expert practical bee-farmer. In districts not adapted for successful bee-culture, it is as cheap to purchase honey as to undertake to produce it; but on the other hand, the care of an apiary on a small scale is something full of interest and curiosity, and may be pursued as a diversion, by those so inclined, which is harmless enough, and which may possibly pay its own expenses.

The Queen—A community of bees is generally understood to contain from twelve to thirty thousand individuals. About nine-tenths of this number are working bees, and the remaining tenth drones; and at the head of this commonwealth, there is a personage entitled "the queen." In reality this is a perfect female and the only one in the hive. The drones are the perfect males; the workers are neuters. This important individual differs in appearance and functions from all the other members of the family. She is darker, longer and more taper in figure than the common bee; her legs are shorter, wings longer, and her color underneath is a yellowish-brown. She has a sting, which she uses only on important occasions. She is the mother of the whole family, and has been known to produce a hundred thousand eggs in a year. She is not only a mother, but a sovereign, and so loyal are her subjects that the absence, whether by death or otherwise, of their queen, causes an immediate suspension of all labor and the speedy dispersion of the whole hive.

Working Bees—These are smaller than the queen and drones, and habitually make provision for the sustenance of the whole family. They proceed on the principle of what is now called a "division of labor," the secret of which man may be said to have learned from the bee. Some make the comb, others keep the eggs warm, others feed the queen and young brood, others ventilate and clean the hive, others stand as sentinels to guard against attack and warn of danger, while still others collect the required flour and honey.

The Drones—These are large, dark and hairy, have no stings, are heavy on the wing, and the sound of their humming is so much deeper as to have given rise to the common term of "*droning*." They are expelled from the hive by the workers in the autumn.

Age of Bees—The queen bees will generally live till the third or fourth season, but they are seldom profitable after the third year, while a large proportion die of old age apparently in their second season. The Italian colonies will usually have a young queen "helping her mother" before the latter becomes unprofitable. If a very large amount of brood is found in a hive, two queens will often be found, busily employed. The age of the

drone is very uncertain. It invariably expires after the act of impregnating the queen, and when they get in the way and are "not wanted," they are summarily put to death by the workers. The worker, if it were not for the arduous duties he performs, and the wear of gathering honey, might live six months and perhaps a whole year, but the average age is not over six months in the summer season, and during the height of the honey gathering period probably not over six or eight weeks. It is the constant process of reproduction which keeps the hives full, and produces the "overflows" which result in "swarming."

Swarming—When the hive contains too many to leave space for breeding young bees and storing honey, they swarm, or colonize. If the owner does not wish to lose his bees, he must prevent this by providing extra hives for the swarms. When the stock of winter feed has become exhausted, which if the bees are left to consume their own stores, will generally be about the first warm days in the spring, they decide to reduce the family by sending out a new colony; this is always led by a virgin queen, and but little trouble is experienced generally in getting them into a hive.

AFTER SWARMING.—The first swarm is frequently followed by a second and even a third. This is a great nuisance and should be obviated by proper measures, as it leaves both old and new hives too weak for utility. An effectual way to prevent after-swarming is, to cut out all the queen cells after the first swarm has gone, and as bees never swarm unless led out by a virgin queen, this will put a stop to the depletion of the hive. A simple method is, immediately after the swarm leaves the old hive, to move it to a distance and put the hive with the new swarm in the old one's place. The flying bees will thus find their way into the new hive, and the numbers being equalized, there will be little danger of after-swarming. Another plan is, as soon as the first swarm has gone out, to supply the old hive with a young fertile queen who will soon destroy all the queen-cells or induce the bees to do so. A swarm which comes out a month after the first, led by a fertilized queen, is not an "after-swarm."

SEASON OF SWARMING—An old adage says:

"A swarm of bees in May
Is worth a load of hay;
A swarm of bees in June
Is worth a silver spoon;
A swarm of bees in July
Is not worth a fly."

This was the result of the primitive system of bee-keeping, but with modern improvements, even the July swarm may be worth the silver spoon and the load of hay together. A colony that was populous in the fall, and has wintered finely, may cast the first swarm in May, but usually the season is about the middle of June. If the feed is plentiful, the hive may be fully stored early in the

season, when a second swarm may be cast with very good prospects of success. "Buckwheat" swarms, or swarms that come out while the buckwheat is in flower, are common, and if there is abundance of feed will lay up a full store during the balance of the season.

SYMPTOMS OF SWARMING—When a colony is intending to swarm they will not, as a general thing, be working like the rest, and quite likely on the day they are intending to swarm, comparatively few bees will be seen going out and in the hive. Clustering outside the hive is often but not always a symptom of swarming. Where you have movable combs the times of swarming can easily be detected. Bees do not, as a rule, swarm till they have got their hives pretty well filled up and have multitudes of young bees hatching out daily. The presence of queen-cells is generally considered an indication of the swarming fever.

PREPARATIONS FOR SWARMING—Every apiarist should always be prepared for a swarm, for even where artificial swarming is practiced and the utmost care used to prevent any other, the chances are that a swarm may come out unexpectedly. There should be at least one hive in readiness, fixed where it is intended the next colony shall stand. It should be banked around with cinders and sand, and fixed as nice and level as an occupied hive. Have some extra combs ready where you can put your hand on them, and also if possible have a hive arranged so that a comb of unsealed larvæ can be got at without much trouble.

ARTIFICIAL SWARMING—This should be undertaken only when the nights are warm and honey abundant in the fields. To divide them, have a hive at hand, of the same size and pattern as the others. Then from four hives take two frames each and place them in the new hive, supplying their place in the old with empty frames. Then move an undisturbed hive to a new place a rod or more away, and place the new hive where the old one stood. This should be done in the middle of a fine day, when many bees are absent in the fields. These will come to their old place and find it strange; but, as it contains stores and eggs from which to rear another queen, they will remain contented in their new home. This may be repeated every two weeks, until you have secured sufficient room, and no hive will think of swarming.

Alighting Boards for Hives—If a hive be placed upon a stool or "legs," with the grass growing thickly about it, the labors of the honey-gatherers are seriously interfered with, and many of the bees are "gathered in" by toads, spiders, and other enemies. Each hive should have an alighting board, about two inches wide, to receive the bees returning with their bounty from the flowers. It is a good plan to have the front of the hives thoroughly clear of weeds and grass, and covered with clear sawdust or white sand. This will enable you to watch the queens in natural swarming, and also to note when "robbing" is going on.

Robbing—The bee, although he possesses a typically exalted character for methodical industry, is a most cold-blooded and heartless animal, and moreover, wherever an opportunity offers, an unconscionable thief. As Root, in his "A B C of Bee Culture," says: "If by the loss of a queen the population of any hive becomes weak, the very moment the fact is discovered by other swarms, they all rush in and knock down the sentinels with the most perfect indifference, plunder the ruined house of its last bit of provision, and then rejoice in their own home, it may be but a yard away, while their defrauded neighbors are so weak from starvation as to have fallen to the bottom of the hive, and only just able to crawl out of the entrance." If a bee can discover a colony weak or careless, he will slip in past the sentinel, and at once proceed to load himself from a honey cell. If he is discovered, he is attacked by the natives of the colony, and frequently killed. If he gets safely away, he speedily returns more rapacious than ever, with four or five of his comrades; the attack becomes systematic, many bees are killed, and if the hive assaulted is not able to protect itself, the stores are plundered.

HOW TO KNOW ROBBER BEES—A robber, in approaching a hive for plunder, will have a sly, peculiar action, going cautiously up to the entrance, and quickly dodging back if he sees a bee coming towards him. If he is promptly grabbed for and driven away by the sentinels as he goes in, there is no fear. If he gets in and you are not certain, you have to watch for his exit. The bee starting out for the fields is slim and moves briskly, because he has no load. The bee with stolen food is plump and full, moves hurriedly and takes wing with some difficulty.

HOW TO STOP ROBBERS—If there is plenty of fighting going on, and the bees are stinging each other occasionally, they will generally manage their own defense, particularly if the entrances are contracted. Sometimes, however, a hive of bees will make no defense, but suffer their hive to be plundered. If bees are going in and out rapidly, indicating that the sentinels are overpowered, the hive must be shut up at once. They may be set at liberty the next morning, but if they will not defend themselves after that, then shut them up for three days. By this time all the robbers that may have been secured with the rest will stick to the hive as if it had been their own.

WHAT HAPPENS IF ROBBERING IS NOT STOPPED—If precautions are not taken to stop robbing promptly, by watching and acting as directed, the honey of a strong colony will often disappear in from two to twelve hours, and the bees will either starve in the hive, go home with the pillagers, or scatter about and die. This is not all, for when the passion is once aroused, they will attack the strongest stocks, and you may find the dead bees in heaps in front of the hives. Thus the whole apiary is demoralized and the work of production stopped, for nothing is being stored up either by the robbers or their victims.

Diseases of Bees—Bees are perhaps less subject to disease than any other class of animated creation, and this is well, since it would be difficult to minister to their physical infirmities and their life-span is so short that there is no room in it for sickness. If a bee is injured or maimed it is at once killed and put out of the way by its fellow-workers, and as hundreds and thousands are daily added to the family circle, the numbers that are lost by accident or wear out by work is a matter of little moment. The only cause of apprehension is when anything goes wrong with the health of the brood or young hatching bees. There is but one such disease and it is known as "Foul Brood."

FOUL BROOD—This is a disease of the *sealed brood*. The symptoms are a dwindling down of the colony because the brood fails to hatch. When this is suspected an examination will easily determine if that cause be at work. The capping of each cell containing the young bee will be found to be sunken, instead of slightly convexed as it ought to be, and if the matter in the cell be moved with the point of a penknife, it will emit a sickening odor. When the malady has assumed a dangerous form this odor may be detected in passing the hives. This disease is apt to spread and be communicated to other stocks by simply carrying the honey from an infected hive. There is really no cure for this disease when it has made much progress, and the only plan is to destroy both infected hive and its bees, by burning or burying. If discovered in time, the bees should be shaken from the comb and put into a new hive, the old hive and comb being destroyed. They must be confined twenty-four or forty-eight hours, till every particle of honey in their honey sacs is consumed—in fact nearly starved—when they may be allowed to build new comb. The Germans use salicylic acid for this disease. In this case, the caps of every diseased brood-cell should be opened and the solution of salicylic acid thoroughly applied with a spray-infuser. Muth, the celebrated apiarist of Cincinnati, uses one-quarter ounce each of borax and salicylic acid in a pint of pure soft water.

DYSENTERY—The other disease to which bees are liable is dysentery. When this prevails you will find the door-steps, alighting-boards and entrances to hives covered with a yellowish, disagreeable-looking excrement. If the weather becomes warm and pleasant, they will generally get over it after they have had a full flight. If on the contrary the symptoms show themselves before warm weather and they get no opportunity to fly, they may get so bad as to cover their combs with this substance and finally die in a damp, filthy-looking mass. This disease is usually due to bad food, coupled with an open, cold hive and an insufficient quantity of bees; honey from rotten fruit, cider from cider mills, of which bees are very fond, and sorghum sirup or *burnt* candy or sugar, is almost sure to produce dysentery. The preventive measures are to have the walls of the hives of some warm porous material, that will absorb moisture and dry out readily. In winter feeding honey gathered in the middle of

summer, so that it is thoroughly ripened, or grape sugar, may be used and dysentery thus avoided.

Pasturage for Bees—Wild-flowers, clover, peas, beans, fruit-trees of all kinds, flowers of the field and garden—these are the best feeding-ground for the bee. Cactus, black hellebore and mignonette are also favorable. Many others are appropriate to different sections, as the Pacific Coast, etc. Buckwheat is a desirable feed for bees and every bee-keeper should have a small field of it. If he had no land it will pay him to furnish seed for a neighbor to do so, or to pay a dollar or two an acre for the honey it yields. This is about as advantageous a plan as there is in the way of artificial pasturage. The honey is dark but it is perfectly wholesome for the winter feeding and enables the bee-farmer to gather the finer qualities of honey from clover-blossoms, flowers, etc., for sale purposes.

Water Supply—If there is no convenient natural supply, a small vessel must be placed near the hive, and frequently filled to the brim. To guard against drowning, a thin piece of wood, perforated with holes, may be so placed upon the water as to cover its whole surface.

Sunshine and Shadow—Too much heat is injurious to bees. They should never be exposed to the full glare of the sun in hot weather.

Enemies of Bees—A few species of birds eat bees; so do toads. Mice, rats, slugs, snails, wasps and hornets are enemies of bees. Against all these, adequate care and watchfulness will protect the hives.

Never Kill a Bee—The smoke of the common puff ball, when dried so as to hold fire, has a stupifying effect on the bees, and renders them harmless.

Wintering Bees—This is one of the most important branches of the science of bee-keeping. It is most important that in taking the surplus honey from the hives there is enough left to winter the hive in good condition. If hives are used so that the surplus can be removed from the top, leaving the bee combs in the lower story untouched by the extractor, there will seldom be occasion to feed. It is customary to remove honey till a certain period in the fall, allowing time for the bees to lay in their winter stock. But if there are too many colonies and too little feed it is necessary to give additional feed. The best feed is made from granulated sugar, which should be of the best quality. Twenty pounds of sugar will make twenty-eight pounds of sirup, which is almost as good as, and cheaper than, feeding honey. The bees should be fed about half a pint to a pint every night till their combs are full. In the beginning care must be taken that you have enough bees in each hive to winter successfully. There should be bees enough in each hive to fully cover four L frames, and if you have the four combs average five pounds each, you will be on the

safe side. A hive large enough to cover six combs clear out to the ends, on a cool night, will require six combs filled to average five pounds. The space must be closely filled up by chaff division boards, the main point being a broad apartment closely filled with bees and plenty of good sealed stores in the comb. With these two conditions alone, a hive will generally winter successfully, even in a hive of inch board. The chaff division boards should be used for filling up the space in the hive, for the reason that the chaff or straw on the outside of hives would no more protect the bees from the cold than the bed-clothes on the roof of your house instead of around your body.

ARRANGING PROTECTION FROM THE COLD—In the top story of the hives, from which the surplus honey has been removed during the season, put a chaff cushion, made of burlap or common bagging, loosely stuffed with soft oat chaff. Over this, when fixing the bees for the winter, put in a peck of loose chaff, so that there are no crannies nor interstices to allow the frost to get in, or the bees to make their way up under the cover during the warm days of the winter. If some of the chaff rattles down among the bees it will do them no harm, but rather good. Care must be taken not to have the hives too heavily "blanketed;" six inches of chaff is better than a foot; and the cushions must be perfectly protected from dampness.

ADVANTAGES OF A CELLAR FOR WINTERING BEES—In a favorable season the ordinary bee-house may answer very well for wintering the bees, but where we are subject to fluctuating winter weather, with mild spells, the bees, when they experience unusual warmth, want to get out, and become subject to disturbances which prevent their turning out well in the spring. A good cellar can easily be made, and indeed ought to be, perfectly frost-proof while it remains at a cool temperature. It will generally be dark, and if not, can be made so readily, and we want no windows in an apartment where bees are kept; for the darker it is, the better. Hives should be supported from the floor or ground, and not set upon shelves, as in this way one hive can be examined without disturbing the others. Bees should never, if possible, be disturbed during the winter.

PREPARING THE BEES FOR WINTER QUARTERS—When the hives have been packed with chaff, as described, they are better to be carried into the cellar on the stand they are on. Then when carried out in the spring they are proof against the cold winds and cold nights which almost always ensue in the early part of the season. If kept well warmed in this way, they will go right on brood-rearing during the winter, and are that much more valuable in the spring.

TIME OF PUTTING THE BEES INTO THE CELLAR—If the bees are packed up and put away before the first frost comes, so much the better, and they should be put indoors on some dry day when the hives are perfectly free from dampness. The hives should be con-

fined, in order to prevent the bees getting out, by wire-cloth, but in such a way as not to allow the dead bees to close and clog the entrance. There should be space afforded in the hive to allow the dead bees to accumulate on the bottom.

BEST TEMPERATURE FOR CELLAR OR BEE HOUSE—It is generally agreed that the temperature of the room for successful winter bee-keeping is about 40°. This should be steadily maintained, and accompanied always by thorough ventilation.

REMOVING BEES FROM THE CELLAR—If the bees in the opening of spring do not get too restless, they should remain in winter-quarters till the soft-maples, or willow and alder, begin to furnish pollen. They should be put out early in the morning of a pleasant day. If possible, set out each hive quietly, so that the rest will not be disturbed. If practicable, each stock is better if placed on its usual summer stand. By this means there will not be so much risk of getting the colonies badly mixed up, or the queens lost, as often happens. Hives and stands may be marked with corresponding numbers to facilitate this. Watch closely for a few days to see that the weak hives do not swarm out. When there is any indication of this, supply a new queen.

DIVISION THIRTEENTH.

SELECTION AND PURCHASE OF LIVE-STOCK.

HOW TO BUY JUDICIOUSLY.

Those who are engaged in the management of live-stock, or who have occasional necessity for purchase, should always be prepared to go about such a purchase with intelligence and system, if they are to deal to the best advantage, and it is therefore well for them to be possessed of the information which will enable them to select with prudence, good judgment and discrimination. Indeed it is desirable, for the sake of general information, that every one should be possessed of the salient points which indicate the principal excellence of the different classes of domestic animals. At one time or other such information will be certain to be found of great advantage to any one, while to those whose occupation or business the care or ownership of live-stock is essential, it is absolutely indispensable. If the ownership of a horse is a necessity to any one, it is both to his pleasure and practical profit and advantage that the animal be as good of its class as he can procure, and the same may be said in respect to any of the domestic animals. In the case of those with whom breeding of animals is a part of their occupation, and feeding a branch of their business economy, there cannot be too great familiarity with every point and characteristic which affects the value of the animal. Success will be largely governed by the ability to recognize by certain external indications what constitutes the peculiar excellence which is sought, and to detect at sight the defects which would be certain to escape the careless or uninformed. First of importance in value and in usefulness among the domestic animals comes the horse.

HOW TO KNOW A GOOD HORSE.

The first thing to be considered is, of course, the purpose for which the animal is designed in use. If the animal is desired for driving or general purposes, what would constitute the highest points of excellence in a draft horse, would be defects destructive of his usefulness for the road; the purest and best thoroughbred in the world would be a useless and unprofitable animal if he is required for the plough, and so on. There are, of course, points of

excellence in a horse which have general application to all classes: these are those of health and symmetry. The former is indicated by a bright clear eye, a clean muzzle, and general ease and freedom of action. This requirement is common for horses for all purposes. The characteristic of symmetry is governed by the harmony of the proportions, and may safely be left to the eye of the purchaser after he has become familiar with the requirements of perfection in the different classes of horses. The general character of American horses has been raised to a high standard by breeders within the past half a century, and as the importance of breeding has now become generally recognized and appreciated, the mongrel, ill-bred and unprofitable kinds of horses are fast disappearing from our stables and farms, and on the general subject of breed in purchasing a horse, the buyer will be pretty certain not to go astray, if the animal is bred from stock with a pedigree in any of the classes. For convenience then we may divide horses into four classes, viz.: draught horses, roadsters, trotting horses, and running horses, and these we may consider *seriatim*.

TO SELECT A DRAUGHT HORSE.

By draught horse, as here distinguished, we do not mean the enormously heavy horse, used for dray purposes in the few great cities of the world. These are of the pure Flanders, or crossed with Suffolk breed, and do not ordinarily enter into the requirements of those for whom this information is compiled. The draught horse treated under our heading is the animal heavy enough to be used for plowing and the manipulation of heavy agricultural implements, and with a certain degree of speed in addition for the marketing of produce and the handling of heavy loads. The best horses for this purpose are those procured by the crossing of the Clydesdale or Percheron horses with native mares of good average breeding.

Marks of a Good Draft Horse—A good draught horse will have broad breast and deep chest, with strong, somewhat upright shoulders, giving great power under the collar; deep and long barrel; loins broad and high; croup round, fleshy and muscular; ample quarters for fore-arms and thighs; short legs, with round hoofs, broad at the heels, and heels not too flat; bone broad and flat; sinews big and nervous. The head should be rather large and long; nostrils, large and well dilated; eyes, large and expressive; forehead, broad; ears, not too large; neck, short and rather massive with high, strong withers. In saying that the shoulders should be somewhat upright, the object is to distinguish from the sloping shoulders, which are a mark both of beauty and swiftness in horses required for other purposes. The

more upright the shoulder, the greater weight the horse is able to throw into the collar by the power of the hind quarters, but it should be remembered that the too upright shoulders are fit for nothing but draft purposes and must work at a slow pace. The shoulders somewhat oblique materially quicken the pace of the horse and add improvement to his appearance.

SELECTION OF A DRIVING HORSE.

Points of a Coach Horse—The coach horse, strictly so called, is an animal not in ordinary requirement in this country, except in large cities, where carriage horses are sometimes desired more for show than speed. The coach horse should be tall, deep-chested, rising well in the withers, with sloping shoulders; legs flat, the bones below the knee strong and good, and the feet sound, open and tough; the body should be well proportioned, its substance deep, compact and well placed; he should possess reasonable speed, and a high knee action adds to the beauty of his paces.

Characteristics of the Roadster or Driving Horse—The driving horse, or roadster, is in this country the animal most in use and demand, and in no other country in the world is he found in greater perfection than in America. The trotting horse, now universally bred up to a high standard, can be bought anywhere in this country with a speed of 2:30 to three minutes, and indeed an animal which does not speed at the trotting pace something approaching to the latter rate is not regarded as entitled to much consideration. The roadster should be of good bulk, but not large enough to be unwieldy, as he is required for hard work as well as for speed. The shoulders should be strong; he should be short in the back, round in the barrel, long in the reach; should stand straight upon the limbs, flat as to the shanks; the hoofs shapely, neither too flat nor too hollow; his ribs should be deep, rump square, tail firm; the chest should be broad, withers high. It is of particular importance that the bones beneath the knee should be flat and the tendon not "tied in." The pastern should be short, and though somewhat oblique, much less so than in the horse required for purely racing purposes. The shoulders, forelegs and feet are the principal points to be looked to. The forelegs should be straight, flat and as large under the knee as they are just above the fetlock. The pastern should be joined to the fetlock, so that the feet neither turn out nor in. To ascertain the proper position of the shoulders, observe him in the stable in a natural position before he has been disturbed. His forelegs should then be in a perpendicular line to the ground. Another test is to watch the horse as he walks past you. If the shoulders are good, the foot will be placed a little forward of a line with the shoulder point; one whose shoulders are too upright cannot

do so. As with all horses, special care must be taken to see that the nostrils are large and expanding.

The Saddle Horse—For a saddle horse the above qualifications are necessary, with some emphasis upon the strength of shoulder, and a requisite length between the shoulders and the "hock," so that the saddle can be borne without pressing upon either.

Selecting a Trotting Horse—When the horse is desired for speed in the trotting pace simply, without regard to the hard work which most roadsters are required to do, he should embrace nearly all the leading requisites we have described as essential to the driving horse, but in addition he should be thoroughbred, or as fine a strain of blood as possible to secure. He will be finer in the legs, head and neck, more delicate in the skin and altogether a much more nervous and sensitive animal than the general purpose driving horse.

THE RACE HORSE.

Points of a Thoroughbred—Horses for the running turf must be blooded animals, with fine and mobile muzzle, large and intelligent eye, small ears, high withers, clean and shapely shoulders, long body with broad ribs, barrel well rounded and firm, not too broad in the crupper; legs clean, fine in bone, well set up over the hoof; strong and muscular in the forearm and stifle. He should possess a deep and wide back and loin, with a droop to the quarters, which are long and straight. The open bosom is a sure sign of want of pace in the racer, as too wide a chest interferes with the full play of the shoulder blade as it glides by the side. The body should be wide, where the rider's knees press together, but below this the ribs should rapidly shelve inwards. The neck is longer and thinner than in other horses, but it should be specially seen to that there is a large windpipe. The head should be wide above the eyes as well as between the ears, in order to indicate a good development of brain, and consequent nervous energy which is one of the principal sources of the racer's power and fleetness. The nostrils should be open and expansive. The ears moderately thin and long, but not inclined to lop, and under a fine muzzle there must be a lean and wide lower jaw. The hind-quarter of the thoroughbred is distinguished by greater length in the thighs, almost approaching the proportions of the greyhound. In height the racer should be fifteen to sixteen-and-a-half hands, and in color, generally bay, brown or chestnut. The mane and tail should be silky but not curly, as a decided curl is a symptom of degraded blood. The hair in the skin is more silky than in common breeds and the thin net-work of veins more distinctly perceptible.

SPECIAL RULES FOR BUYERS.

There are some general rules by which, after satisfying himself that the animal selected is of the right breed for his purpose and possesses the distinguishing characteristics above mentioned, the buyer should be guided in ascertaining the age, health and soundness of the horse. For the age, he should be governed by the rules given on pages 484-489. For the general indications of health he will look to the clearness and brightness of the eye, cleanness of the nostrils, elasticity of the skin and the general appearance of life and good spirits. In particular, he should always look well to the nostrils. The horse can breathe only through the nose, and the air which goes to and returns from the lungs, must pass through the nostrils. When the animal is put to speed or severe exercise of any sort, the nostrils must expand or the horse will be distressed. The nostrils should be large, elastic and expanding. The lips should be thin and sensitive, but the mouth firm and well set. A loose or hanging mouth is a sign of weakness or sluggishness. The neck should be muscular without being heavy. The skin too should be moist, soft, elastic and flexible.

The Signs of Disease or Weakness—The safest test of the soundness of a horse, is to look to the points where disease or weakness are generally manifested. A horse may have experienced illness or accident, and yet have recovered so as to be perfectly sound. Still, the chances are that some constitutional weakness may have resulted, or a predisposition to weakness or disease have been induced, and if he bears any mark of such an experience, you will purchase at your risk. If a horse shows the slightest evidence of unnatural condition of the eye; if there is the least symptom of catarrhal affection; if you can detect anything abnormal in the act of respiration; if he coughs ever so slightly; if he has any enlargement of the glands under the jaw, or show signs of corns, curb or enlarged hock; if he seems inclined to "rest" one foot, or has thickening of any bone or muscle, you may depend that he is unsound. The crib biting horse may safely be considered an unsound one. Cutting is a serious defect and if there are any marks of such a habit, it will be a safe plan to let the animal alone.

TRICKS OF HORSE DEALERS.

Methods of Deluding a Purchaser—The chicanery and deception of horse dealers are proverbial. One purchasing a horse should exercise extreme caution in buying from a "jockey," or one whose business it is to deal, unless he himself understands about a horse, or unless he is accompanied by some one upon whose judgment he can rely. The fraudulent acts employed by horse-dealers are not confined to those who sell alone, but also are used by those

who buy. Among the seller's tricks we will enumerate the following:

How Heaves is Concealed—This can be accomplished by giving a horse a third of a pound of small bird shot. The animal will give no evidence of his having the heaves, until the shot shall have been evacuated by him. Dealers also accomplish this same result by dosing the horse heavily with gin; this also has the effect of rousing the horse's energies, and not infrequently a horse which appears to be a good, spirited driver in the hands of the dealer, will be dull and sluggish in the hands of the purchaser, because the effect of the drunkenness has passed away.

How Lameness is Covered Up—If a horse is lame in one shoulder, the fact can be temporarily concealed without difficulty by removing the shoe, and when it is replaced inserting a bean or some other hard substance of that character between the shoe and the foot. This process by making the horse lame in the foot thus treated, will prevent his showing the lameness to which he is addicted.

Disease of the Navicular Joint—This makes the horse intensely lame, and is concealed by the operation known as neurotomy or "nerving," which is effected by making a small incision about half way between the knee and the pastern joint on the outside of the front leg, at the back part of the shin bone. This cut will reveal a small white tendon or cord, which can be cut off, and the horse will travel on the hardest road without any limp whatever. Sometimes this nerving process ought to be done; but a horse which has been nerved ought not to be purchased unless the purchaser is aware of the fact, and the operation itself should never be undertaken except by an experienced Veterinary surgeon.

How Old Horses are Made to Look Young—This is done by filing the teeth and marking them by use of a hot iron in imitation of nature. The cavities over the eyes of an old horse are filled by puncturing the skin and filling the little holes with air through a tube, and then closing up the puncture; the brow of the old horse then appears as smooth as that of the young one, but of course in a very short time the actual condition will be made manifest. White hairs are painted out also.

How Spots are Put Upon Horses and How the Color is Changed—To make black spots on white horses, half a pound of quick-lime (powdered) is beaten up with four ounces of litharge, and over the mixture lye is poured. The whole then is boiled, and the scum skimmed off. This scum contains the coloring matter and is applied to such parts of the animal as it is desired to have made black. Sorrel horses or bay horses are also dyed black with a very similar composition. Four ounces of quick-lime are boiled with four ounces of water, and the scum will afford the proper coloring matter. If the hair of the animal is not greasy, it will be made black in one night by this process. Horses are marked with

peculiar marks, such as a star in the forehead, by taking a piece of tow-line, and cutting it in the size of the star. Warmed pitch is spread on this, and it is stuck fast on the place intended (on the forehead or other part of the animal, which has been first shaved), left there for four or five days, then removed and the spot washed with smart water, or elixir of vitrol, four times a day when well. When the hair appears again it will be white.

POINTS FOR PURCHASERS OF CATTLE.

The intending purchaser of live stock, whether for beef or cows for the dairy, will start out at a great disadvantage unless he knows in advance exactly what he wants. He must be qualified to recognize what he wants when he sees it. A few simple rules and the knowledge which he will gather here, will enable his eye and his judgment to guide him without risk in making such purchases. Almost any person can distinguish, in a general way, between a good cow and a poor one, when there is evidence of care and breeding, on the one hand, or ill-condition of body and blood on the other. But, not every one knows that a good beef cow may be a very poor milker, and vice-versa. It is important, therefore, to know the distinguishing characteristics of each class, as well as the indications of superior excellence in each.

The Animal for Fattening—The prominent features of a good fattening animal are a broad muzzle; eyes bright and full; horns and neck short and fine; head fine, clean and well carried. The brisket should be deep and full and the space between the fore-legs wide, to give ample room for lungs; the back broad, straight and smooth, the body well rounded and the ribs springing well outward, barrel-like, from the back. The hips should be straight; flanks well-filled and low down; hide soft, velvety and smooth; the hair thick, soft and fine to the touch; the thighs should be full; the legs short and firmly placed. The loin and rump should be broad and the tail fine. An animal exhibiting these points will not fail to prove profitable.

How to Select a Good Dairy Cow—For the profitable guidance of our readers on this subject, we cannot do better than to embrace here the description of the milch cow, given by Mr. Charles L. Flint, in his work on "Milch Cows and Dairy Farming." He says: "Cows should have a fine, clean and rather small head, tapering toward the muzzle. A cow with a large, coarse head will seldom fatten readily or give a large quantity of milk. The coarse head increases the proportion of weight in the least valuable parts, while it is a sure indication that the whole bony structure is too heavy. The mouth should be large and broad; the eye should be bright and sparkling, but with no indication of wildness—rather a mild, feminine look.

These points indicate gentleness of disposition. The horns should be small, tapering, yellowish and glistening. The neck should be small, thin and tapering from the head, but thickening when it approaches the shoulder. The dewlap (the part which hangs from the throat, and which laps or licks the dew when grazing) should be small. The forequarters rather small when compared with the hindquarters. The form of the barrel should be large and each rib project further than the preceding one up to the loins. She should be formed well and broadly across the hips and rump. Some judges think that a depression of the back, along the middle part, sometimes called "sway-back," is a good point, especially when the bones of the hindquarters are rather loosely put together, leaving the rump of great width, and the pelvis (the bony structure which confines the external urinary and generative organs) large, and the organs and milk-vessels lodged in the cavities largely developed. The skin on the rump should be loose and flexible. This point is of great importance, as when the cow is in low condition, or very poor, it will be harder and closer than it would otherwise. The udder is of special importance—it should be large in proportion to the size of the animal, and the skin fine, with soft, loose folds, extending well back, capable of great expansion when filled, but shrinking to a small compass when entirely empty. It must be free from lumps in every part."

Marks of a Good Milker—The following is the celebrated Dr. Guenon's milk test, by means of what is called the "Escutcheon." This may be distinguished by the hair, which will have an upward tendency, on the udder and above, taking a course opposite to that covering the other parts of the skin, the color being less bright than that of hair on other parts of the body. The Escutcheon begins at the centre between the four important teats on the udder. Part of its hairy covering comes forward beneath the belly from the navel to the udder, starting downward upon the legs and hocks; thence rising upon the legs to the middle of the under surface of the thighs and upward on the udder, sometimes continuing as high as the top of the entrance to the urinary organs. The Escutcheon can be relied upon to indicate: 1. By its extent, the capacity for milk giving. 2. By the fineness of its hair and the color of the skin, the quantity and quality of the milk. If the Escutcheon be large, the milk capacity of the udder will also be large and the milk yield abundant, and vice versa. In cows which are the best milkers, the hair of the Escutcheon is fine and the skin from the crutch to the urinary quarter, yellowish in color, and releasing slight scales of a fatty character when scratched. Cows which show this peculiarity in the "twist" and on the insides of the ear *can be relied on for milk rich in butter and cheese*, whatever its quantity. If the Escutcheon have white skin, and the hair is long and thin, the milk will be thin and watery. When the cow is a persistent milker the hair on the Escutcheon will form a shape somewhat like that of

a head of wheat in feather. *Calves*, no matter what their age or condition, *which will make good milkers* can be accurately and safely selected by the escutcheon indications. It may be noted that the escutcheon should be accompanied by large milk veins.

Marks of an Unprofitable Cow—The kind of cow which should not find a place in the farm or stock yard is easily distinguished by the following characteristics: She will have a large head and large long horns; the form may be plump, but the thighs will be fleshy and the hair long and coarse, the udder will be indifferently developed, hard and muscular, and shrinking but little after milking. It will not show veins on the perineum or udder, and will have but a small escutcheon. These are not good milkers, drying in four or five months after calving, or rapidly after impregnation. Neither are they adapted for taking on flesh to good advantage, as too great a proportion of weight goes to the waste parts.

Choice of a Bull for Breeding—A bull will hardly ever be bought for any other purpose than for breeding. Consequently the first and most essential point is to see that your bull is bred from a sire with a good pedigree, whatever class may be selected, and from a cow of high grade, in the same breed. He should be young, not more than two years old, in perfect health and free from blemish. The bull which will prove a good getter of calves for dairy purposes will show an escutcheon similar in character to that described above for cows. He may be deemed a good calf-getter when the ascending hair of his escutcheon is not interrupted by hair growing downward. The escutcheon in the bull begins at the front of the scrotum, runs along within the hocks, spreads out on the thighs, ascending to the fundament, where the respective sides meet. On both sides of the belly will be found veins similar to the milk-veins of the cow. They start forward from the scrotum and reach a little beyond the navel, where they disappear in a little cavity. The skin of the scrotum should be supple, with fine, thin hair, soft and silky; its color yellowish, and the scales which detach from it oily to the touch.

How to Ascertain the Weight of Live Cattle by Measurement—Multiply the girth in feet by the distance from the bone of the tail immediately over the hinder part of the buttock, to the forepart of the shoulder blade, and this product by 31, when the animal measures more than seven and less than nine feet in girth: by 23, when less than seven and more than five: by 16, when less than five and more than three; and by 11, when less than three.

Example—What is the weight of an ox whose measurements are as follows: Girth, 7 feet 5 inches; length, 5 feet 6 inches?

Solution— $5\frac{1}{2} \times 7\frac{5}{12} = 40\frac{79}{100}$. $40\frac{79}{100} \times 31 = 1,264\frac{39}{100}$ which will be the weight in pounds.

A deduction of one pound in twenty must be made for half-fattened cattle, and also for cows that have had calves. It is under-

stood, of course, that such standard will give only the approximate weight.

HOW TO SELECT GOOD SHEEP

The best sheep for general purposes will be procured by crossing from the common sheep with the pure blood Merino. Two or three Merino crosses will raise it to the rank of a *first-rate wool-growing sheep*, scarcely inferior to the Merino, except that it does not transmit its good qualities to the offspring with quite so much certainty. Such a sheep will present nearly all the points of the perfect Merino, which may be taken as a standard in defining the points which a good sheep will exhibit.

Marks of the Best Sheep for Wool—The good wool-producer will have a shortish face, broad between the eyes, with the nose pointed, and on the end fine and free from wrinkles. The eye should be bright, moderately prominent, and mild in expression. The neck should be straight (not curving downwards), short, round and stout—particularly so at its junction with the shoulder, forward of the upper points of which it should not sink below the level of the back. The points of the shoulder should not rise to any perceptible extent above the line of the back. The back to the hips should be straight, the crops (that portion of the body immediately between the shoulder-blades) full; the ribs well arched; the body large and capacious; the flank well let down; the hindquarters full and round, the flesh meeting well between the thighs (or in the "twist"). The bosom should be broad and full; the legs short, standing perpendicular and well apart. The skin is an important point. It should be loose, and of a rich, delicate pink color. A colorless skin, or one approaching a tawny or butternut hue, indicates defective breeding. The subject of wrinkles is a disputed point; like the color of a Berkshire hog, this is somewhat a characteristic of the Merino. The best rule is that while a smoothly drawn skin with absence of dewlap is not desirable, an exceedingly wrinkled neck will add but little to the fleece, and certainly not enough to compensate for the deformity and the great impediment it places in the way of the shearer.

Wool Indicating the Profitable Fleece—Evenness of fleece is of the first importance. Many sheep exhibit good wool on shoulder and side, while it is coarser and even hairy on the thighs, dewlap, etc. This deteriorates the value of the fleece. Rams of this character should not be bred from, and the ewes gradually excluded from the breeding fold. The wool should be if possible of even length and thickness over the whole of the body, shortness in the flank, and shortness or thinness on the belly, being serious defects. The weight of the fleece being equal, medium length with

compactness is preferable, as it is a protection from inclemency of the weather and against the cold rains of spring and fall.

Gum in the Wool—Merino wool prior to washing, should be yolkly or oily, but not to the extreme extent occasionally seen, giving it the appearance of being saturated with grease. The extreme tips of the wool may exhibit a sufficient trace of gum to give the fleece a darkish cast—particularly on the ram—but a black pitchy gum, extending an eighth or a quarter of an inch into the fleece, and which cannot be removed by ordinary washing is objectionable. A white or yellowish *concrete* gum, not removable by washing, is sometimes found in the interior of fleeces. This is a very unfavorable indication.

Selecting Profitable Sheep for Mutton—In selecting sheep for mutton, the choice is deemed best between the South-down and New Leicester breeds. A cross between native sheep and the improved Cotswold is also well adapted for this purpose, and is preferred by many breeders. The chief characteristics of these breeds are as described below:

The New Leicester—Head hornless, long, small, tapering toward the muzzle and projecting horizontally forward. Eyes prominent, with quiet expression. Ears rather long, projecting backward. Neck broad at the base, and presenting a horizontal line from rump to poll. Breast broad and full; shoulders broad and round, with no angular formation where joined either to neck or back—*particularly* no rising of withers or hollow behind these bones. The arm fleshy down to the knee; bones of the leg small; legs wide apart, no looseness of skin, and comparatively little wool on them. Chest and barrel deep and round, ribs well arched out; carcass gradually diminishing in width towards rump. Quarters long and full; thighs wide and full. Pelt moderately thin, but soft and elastic, covered with a good quantity of white wool, not long, but of considerable fineness.

The South-Down—Head small and hornless; face medium-sized, speckled or gray; narrow space between nose and eyes; thin under jaw; ears tolerably wide, and like the forehead, well covered with wool. Eye full and bright, but not prominent. Neck of medium length, thin toward the head, enlarging toward the shoulders, where it is broad and straight. Breast wide and deep, projecting forward between the fore-legs. Ribs come out horizontally from the spine, the last projecting more than the others. Back flat nearly to the setting on of the tail, rump broad and tail set on high up nearly on a level with the spine. Belly straight as the back. Legs medium length; forelegs straight from breast to foot; far apart both before and behind, the hinder having a direction outward and the "twist" particularly full. Belly well defended with wool, and wool coming down before and behind to the knee and the hock.

The Cotswold—This is a large breed of sheep, with long abundant fleece, the ewes being particularly prolific and good

nurses. In crossing with the Leicester, the size is somewhat reduced, but their maturity is rendered earlier, and the carcasses considerably improved. The wethers may be fattened at fourteen months old, when they weigh from fifteen to twenty-four pounds to the quarter.

HOW TO KNOW A GOOD HOG.

The purchaser of hogs for breeding must be particular, if he wants to make the greatest profit from his business, to produce animals which will mature early and fatten easily; and one of the safest guarantees is to purchase from stock from thoroughbred boars, and from high-grade or thoroughbred sows.

Points of a Good Fattening Hog—The prominent characteristics of a good hog are a wide face—if dishing, it will denote an animal easy to keep and of quiet disposition; the muzzle should be fine and clean, and under the jaws heavy and round; the neck short and thick. These features indicate a robust constitution and large vital force. The space between the fore-legs should be wide, the girth behind that large and of full development, and the fore-quarters broad and deep. These qualities indicate ample lung space, a desirable property in these animals. The ribs should spring well outward from the back, showing good stomach capacity and powers of assimilating food. The “slab-sided” or long-nosed hog is condemned by his appearance as an unprofitable animal. The loins should be broad and the hams well developed, showing health and activity of urinary and generative organs. The skin should be fine, elastic to the touch, and the hair soft, without bristles. This indicates a healthy liver. The joints should be small, the legs fine and clean, and the animal well set up on its feet.

DIVISION FOURTEENTH.

BREEDING LIVE-STOCK.

ON BREEDING GENERALLY.

It is hardly necessary for the purposes of this work to enter into statistics, or to resort to elaborate argument to prove the paramount necessity of the best attainable breeding to the most successful results. Of the general advantage of breeding up, in every branch of live-stock, every intelligent farmer is already convinced. What we here aim at is rather to furnish him with such information as will prove of value, and aid in the proper direction of his efforts at improvement of stock and the consequent increase of his profits, enabling him to benefit by the experience of others, instead of having to make costly experiments for himself. In regard to feeding, which is of correlative importance with breeding, and inseparably connected with its favorable prosecution, it need only be said that it so intimately concerns the whole economy of stock-raising, and so vitally affects the degree of profit to be obtained, that no excuse need be offered for putting the reader in possession of the knowledge which, intelligently and systematically applied, will enable him with certainty to reach the largest possible returns for the least possible outlay. In the experiments of scientific breeding, it has been definitely established that not only does "like produce like," and that it pays to "breed from the best," but the transmission of qualities from parent to offspring may be so regulated that we can accurately govern the development of certain peculiarities and characteristics which constitute the special value of certain animals or classes of animals designed for specific purposes. The development of the art of modern breeding has been founded mainly upon the experience of leading breeders, and the result of experimental efforts. It has also resulted in the establishment of consistent principles of general application, which are found to be fully warranted and endorsed by the science of physiology. In other words, the results attained in breeding are but the illustration of natural laws. Experience has added to experience, till it has been proved by success, when it has invariably been found to harmonize with the physiological law, and to have met with failure only in so far as it diverged therefrom. The whole philosophy of breeding lies in the survival of the fittest. Wherever the weaker organism is

brought into contact with the stronger, in the propagation of the species, the offspring will bear the stamp of improvement, and not of deterioration. In this way the commonest animal, continuously bred to a superior strain of blood in the male, will in a few generations have acquired nearly all the physical excellences towards which it has been bred up, except in regard to the transmission to offspring, which is never so strong as in the animal of pure blood of its species.

GENERAL PRINCIPLES OF BREEDING.

Conditions Required in the Parent Animals—The breeders of live-stock cannot be too particular as to the condition of the animals from which he desires issue, for their fertility will depend upon various causes, and is susceptible to influences of even trivial character. The previous course of the life of the animal will frequently affect its power of reproduction, and especially when any important end may depend, it is incumbent upon the breeder to ascertain what this has been. When the Spanish Merino was first introduced into England, there were numerous occurrences of barrenness of the ewes, and those which dropped lambs were often deficient in milk supply; these mishaps have been attributed to the change in the sheep's mode of living, being relieved in the rich pastures of England of the necessity for exertion under which they lived in the mountainous districts of Spain. Again, the breeder must look to the feeding which has been given his animals, because in animals which have had the nutritive powers developed and sustained to the proper degree, the greatest fertility may be expected.

Influence of Feeding upon Fertility—It is of course desirable to realize the largest production possible from stock. The ewe which will drop twins, provided they be healthy, is in the natural course of things more valuable than that which produces but a single lamb. Scientific men have noted the fact that feeding upon rich grasses will induce the dropping of twins by one ewe in three, while in localities where there is not the same opportunity for nourishment, not one ewe in twenty will do so. Dependence of fertility upon food is also noted in the larger animals. As stated by Mills, in his "Treatise on Food," "Mares which have been brought up in the stable, on dry food, do not breed at first; some time is required to accustom them to their new aliment."

Excessive Fat Disqualifies a Breeding Animal—The greatest development of nutrition will have a tendency to impair the vitality of the generative organs, for as Carpenter, in his "Comparative Physiology," says, "There is a certain degree of antagonism between the nutritive and generative functions, the power of the one being executed at the expense of the other," and this renders it necessary for the breeder to draw closely the line of division

between excess and deficiency, so that the "golden mean" may be preserved, upon which, as in every other business, the best success depends. While it is well known that animals too fat are not prolific breeders, yet if the barrenness be not dependent upon disease, it may be easily corrected by exercise, or a systematic reduction of the system. Decrease of milk and a tendency to barrenness are the frequent attendants upon a constitution which fattens readily. Hence "show condition" is not good for breeding stock.

Conditions of Prolific Breeding—Ancestry also must be taken into account, when fruitfulness is desired, because an animal coming from a stock inclined to sterility, or infrequency of offspring, will inherit a tendency in the same direction, and notably the tendency to twin-bearing will be found hereditary. This is the repeated indication in the human family, shown by numberless observations, and sheep-rearers have an accepted notion, the result of experience, that twin-lambs in sheep is encouraged by saving the ewe-lambs which are twins. Culley, on "Live-Stock," records that Teeswater ewes bring forth generally two lambs each, sometimes three; there are some instances of four or five, and the author cites one case of a ewe which "when two years old in 1872, brought forth four lambs; in 1873, five; in 1875, five; in 1876, two, and in 1877, two,—the first nine in eleven months. Among cattle a peculiarity especially is shown when twin-calves are born, one male and the other female; the female is barren and is called a free martin. When both twins are of the same sex, there is nothing abnormal about them.

Peculiar Characteristics may Develop After Several Generations—It is the more important for the breeder to acquaint himself with the antecedents of his animals, because peculiarities of habit, shape or weakness, may recur in the descent after the lapse of generations. As an illustration, Goodall records that in Maine polled-cattle appeared in a herd thirty-five years after the destruction of every one of that character, and notwithstanding that every calf dropped on the farm in the meantime had developed horns. It is indisputable that the repetition of peculiarities is the expression of some definite law of physiology. It comes so uniformly, and has such an absolute creation where the ancestry is traceable; but there is not sufficient data upon which to found any definite rule. But it is certain that the animal is not the creation of its immediate parents alone, but involves far more than this—its individuality carries with it the sum of the existencies of all its ancestors, and these are determinable by the relative strength of character, or the dominant force of such ancestry.

Proper Age for Sire or Dam—In youth the physical energies are engrossed by the labor of perfecting the physical structure of the individual animal, and generative power is not aroused so that it may have proper exercise; and so in age, when the physical functions are deteriorating, the faculty of reproduction will not

be vigorous. In view of these truths, and they are axioms upon which physiologists are in accord, the breeder must bear in mind the age of the animals which he desires to have reproduce themselves. One at least of the animals should be fully matured, and better if both be of mature age. If the mare is young, the horse should not be less than six or eight years. The mare should not be less than three years old. The following citations from sketches of the great American trotting horses will be found of interest here:

MAUD S., by Harold, at nine years, out of Miss Russell, at nine years.

TRINKET, by Princeps, at four years, out of Ouida, at ten years.

LUCY, by Patchen, at six, out of a dam, age not recorded.

GOLDSMITH MAID, by Edsall's Hambletonian, at four years, out of a dam of eight or nine.

LADY KEENE, by Mambrino Chief, at eleven years, out of a dam whose record is not complete.

DEXTER, out of Rysdyk's Hambletonian, at eight years, out of a dam of ten.

RYSDYK'S HAMBLETONIAN, by Abdallah, at twenty-three years, out of the Kent mare, age not stated.

Dangers of Coupling Young Animals—It has been definitely ascertained that animals which are very young will transmit to their offspring a tendency to disability which only requires slight cause for its development, and those which are old, or whose constitutions have been weakened by overwork or ill-treatment, will transmit the like infirmities to their get. These effects may be dormant or unexpressed for a whole generation, but it may certainly be expected to reappear in the next, while if the coupling so hazardously undertaken be continued, disastrous results cannot be avoided.

Transmission of Diseases—The close observer of livestock will have noticed the regularity with which certain abnormal conditions are inherited, especially as concerns diseases. This is particularly true in diseases which are constitutional, but its truth is apt to be overlooked in cases where ancestral defect is apparently disconnected with the structure of the beast. All hereditary diseases are not evident at birth, and may only appear after a lapse of years; but for all that, they are none the less hereditary, and connected with the being of the animal; although it is said in the latter case that a predisposition to disease has been received, and in the former it is called a weakness born with the animal. Manifestly, however, there is no real distinction between the two. Scrofulous affections, —tuberculosis, water-on-the-brain, glanders,—are especially virulent and frequently appear in horses, cattle, sheep and hogs. Tendency to consumption is often indicated by certain well-marked signs. In cattle the most obvious of these are a thin and apparently long carcass, narrow loins and chest, flat ribs, hollow flanks, extreme thinness and fineness of the neck and withers, hollowness behind the ears, fullness under the jaws, small, narrow

muzzle, hard, unyielding skin, thin and dry hair, irregularity in changing the coat, prominence of the bones, especially about the haunch and tail, and want of harmony among the different parts of the body, giving the animal a coarse and ungainly look. These are appearances all indubitably hereditary, and indicative of a weak and vitiated constitution, and of a decidedly scrofulous tendency. These indications will answer for other classes of animals which are the victims of a scrofulous inheritance. That frightful constitutional disease, glanders; grease and ophthalmia are all hereditary, and the taint may be transmitted for some generations. A horse in one generation may show no signs of disease, but the inherited tendency will be transmitted with precision to his progeny.

Relative Influence of Sire and Dam upon Offspring—The influence of both the parents upon the offspring must not be ignored. It has been contended that it is the sire, if he is well bred, which gives the dominating character to the offspring of animals; but the many instances of resemblance to the dam shows this not to be constant. Dr. Allen Thomson, in his article on "Generation," in the "Cyclopedia of Anatomy and Physiology," puts this question in its proper light. He says: "It is generally admitted that in the bull, horse, and other domestic animals, the purer and less mixed the breed is, the greater is the probability of its transmitting to the offspring the qualities it possesses, whether these be good or bad. Economical purposes have made the male in general the more important, because he serves for a considerable number of females. The consequence of this has been that more attention has been paid to the blood, or purity of race, of the stallion, bull, ram and boar, than to that of the females; and hence it may be the case that these males more frequently transmit these qualities to the offspring than do the inferior females to which they are made to breed. But this circumstance can scarcely be adduced as a proof that the male, other things being equal, influences the offspring more than the female." Rev. Mr. Berry, discussing in "Transactions of the Highland Agricultural Society," the question whether the breeds of live-stock connected with agriculture be susceptible of the greater improvement from the qualities conspicuous in the male, or those conspicuous in the female, does not concede to either parent any excessive influence over that of the other; and he reaches the conclusion that the best-bred will have the greater weight with the offspring's character. It is observable that the parent most cleanly bred will be prepotent—will have the more decided influence in affecting the character and constitution of the offspring, and therefore it is the part of wisdom to select the superior males for the stud or herd. But though this is the ordinary rule, there are frequent conditions which interfere with its operation and qualify it. For instance, there may have been bred in the sire of a horse a tendency to speed, and the staying powers may have been neglected, and the unusual development in that as in any other

direction will be likely to defeat its own perpetuation. The results commonly depend upon a variation in individual power. The ancestry of parents must be observed. Miles, in his "Stock Breeding," concludes his view of this question of parental influence by saying: "The relative influence of parents upon the offspring evidently depends upon conditions that cannot in all cases be determined. When the characteristics of one parent have been fixed by the inheritance of the same peculiarities for many generations, it will undoubtedly prove to be prepotent in the transmission of its characters, if the other parent has a less stable organization; but this will not prevent the inheritance of the peculiarities that are not included in the dominant characteristics."

Cross-Breeding—This is uniting the blood of animals which are of distinct breeds within a species. Its advantages have been the theme of many writers. When there is an express object in view, it is undoubtedly a very desirable practice. But benefits which flow from it are not always to be attributed to the breeding itself. Among cattle, sheep and hogs the value of cross-breeding is apparent particularly for the enhancement of the price which the stock will bring in the butcher's market, and in this regard it may be well to dwell upon the good results which will arise from careful attention to the practice. Pure bred short-horns, Herefords and Devons possess a tendency towards fattening rapidly, and when these breeds are crossed with the common stock of the country, called "natives," this peculiarity is inherited, and benefit is derived by improving the fattening power of the former for the butcher, and lessening the excessive tendency to fat in the latter, and thus improving it for the dairy. Cross-breeding of sheep also entails the same benefits, as a cross between the Lincoln and Leicester sheep will improve the size, the quantity of the wool and the quality of the mutton, and although the distinguishing propensity of the pure-bred Leicester to fatten at an early age is somewhat changed, the greater admixture of lean mutton more than compensates for this by giving a superior value to the carcass. In crossing thoroughbred pigs with common stock there is produced through its improvement of the ordinary stock the most profitable of marketable swine for the purpose of food. Thus thoroughbred boars will add immensely to the swine-breeder's profits. Successful breeding of early lambs can be accomplished by crossing well-bred rams with ordinary ewes. The Southdowns are best for this purposes, the offspring fattening rapidly, and thus being ready for the early market. The ewes selected should be good breeders, and good feeders, and healthy animals.

Parents Should Exhibit the Points Desired in Offspring—All writers upon cross-breeding insist upon having the parent animal show the characteristics desired for transmission, whether it be the male or female of pure blood, and all agree that wisdom demands the careful selection of a pure-bred male. The

purser or less mixed the breed, the more likely it is to be transmitted to the offspring. Hence, whichever parent is of the pure blood will be more generally represented in the offspring; but as the male is usually more carefully selected and of purer blood than the female, it generally follows that the male exerts more influence than the female, the reverse being the case when the female is of more unmixed blood than the sire.

Definite Results Must be Aimed at—But while cross-breeding is productive of the most desirable results in some particulars, it should not be undertaken without a definite purpose; otherwise the result may be to deteriorate the stock. The Royal Society of England has placed itself upon record on this subject as follows: "It is to this injurious system (promiscuous cross-breeding) that may be traced the existence of so many miserable breeds of cattle in this country."

Good Blood only Should be Bred From—We have dwelt upon the power which pure-bred animals possess of marking their offspring, and it has been sought to direct the reader's mind to the conclusion that only good blood can be profitably bred from. Especially is this a necessity in cross-breeding, because it is a definitely ascertained fact that cross-bred animals do not transmit to their get their own characteristics. Although such characteristics seem to be controlling in their own temperaments, they will frequently, whatever their personal traits, transmit a tendency to the development of their ancestral peculiarities. Changes in stock cannot be accomplished quickly by crossing; results in the direction of a distinct improvement of the breed, or the creation of a new breed, can only be reached by years of systematic and ceaseless effort. It took the Cheviot sheep a quarter of a century of direct exertion to affect lastingly the blood of the Scotch sheep, and even then the characteristics of the original stock would occasionally crop out.

How Cross-Breeding Can Be Made Profitable—Undoubtedly, although the benefits of the cross are most evident in the first generation, and the defects or incongruities of one or other breed are continually breaking out, unless the characteristics of the two breeds are altogether antagonistic, it is practicable in course of time, by a system of selection and careful weeding, to establish a new breed altogether. But while crossing for the purposes of the butcher may be practiced with impunity and with great advantage in the directions we have pointed out, no one should undertake, by crossing, the establishment of a new breed, unless he has clear and well-defined views of the object he wishes to accomplish, and has duly studied and thoroughly understands the principles on which it can be carried out, and is also, moreover, willing to bestow on that object half a lifetime of constant and unremitting care and expense. From the great variety of improved breeds that can now be obtained, adapted to almost every climate and system of management, it can

not be desirable, and will not be found profitable, to attempt the formation of a new breed, as any special qualities that may be desired can be more readily obtained by a modification of the characteristics of some existing breed that approximates in its qualities to the proposed standard.

Cross-breeding among cattle, sheep and swine, therefore, can only be recommended for the production of animals intended for the butcher.

Close, or In-and-In Breeding—This is the uniting of the same blood, by coupling near relatives with a view to maintain, improve and emphasize the peculiarities of the breed. Although this is a subject of wide discussion, all the results which have been derived from it amply demonstrate its wisdom, and all the breeders of stock who have achieved distinction from the excellence of their animals, as proven in the service they can render or the monetary gain which they have afforded in the market, have practiced in-and-in breeding. It is the only way in which certain character can be fixed and made possible of development. This is an axiom. Stonehenge says: Breeding in-and-in is injurious to mankind, and is forbidden by both divine law and human law-makers. On the other hand, it prevails extensively in a state of nature with all gregarious animals (such as the horse), among whom the strongest male retains his daughters and grand-daughters until deprived of his harem by younger and stronger rivals. Hence, in those of our domestic animals, which are naturally gregarious, it is reasonable to conclude that breeding in-and-in is not prejudicial, because it is in conformity to their natural instincts, if not carried farther by art than nature teaches by her example. Now, in nature, we find about two consecutive crosses of the same blood is the usual extent to which it is carried, as the life of the animal is the limit, and it is a remarkable fact that, in practice, a conclusion has been arrived at which exactly coincides with the natural laws. "Once in and once out," is the rule for breeding given by Mr. Smith in his work on "Breeding for the Turf"; but twice in will be found more in accordance with the practice of our most successful breeders."

Success of In-and-In Breeding Exemplified—In the *Farmers' Magazine*, we find that the most celebrated herd of Hereford blood was the product of eighty years of close breeding, which was a necessity when, as the gentleman whose experience is given says: The herd was the product of a single bull and two heifers, "without any cross of blood." He details his method thus: "By far the greatest part of my herd has been bred in-and-in in a direct line, from one cow in calf for the twentieth time. I have bred these calves from her by two of her sons." The Devons and Shorthorns have been bred in the same manner, and the Herd Books show their excellence, while the certainty with which they impress themselves upon their offspring is an acknowledged fact. Hon. Henry S. Randall, discussing the pros. and cons. of the question of in-and-

in breeding for sheep, reaches the conclusion that the sheep-breeder may avoid any bad effects of in-and-in breeding, and at the same time preserve the character of his flock, by seeking rams of the same breed, and possessing as nearly as possible the characteristics which he wishes to produce in his own flock. He explains that this system of breeding by no means implies "incestuous" connection, for as Stonehenge defines it, it is the "pairing of relatives within the degree of second cousins, twice or more in succession." Mr. Randall defines the practice to be pursued as follows: "Every one desirous of starting a flock will find it his best economy, when the proper flocks to draw rams from are not convenient, to purchase several of the same breed, but of different strains of blood. Thus ram number 2. can be put upon the offspring of ram number 1, and number 3 can be put upon the offspring of both, and both upon the offspring of number 3. The changes which can be rung upon these distinct strains of blood, without in-and-in breeding close enough to be attended with any undesirable results, are innumerable." Brother and sister are of the same blood; father and daughter half, and so on. Breeding between animals possessing one-eighth the same blood would not be considered very close breeding, and it is not uncommon, in rugged, well-formed families, to breed between those possessing one-fourth of the same blood. The original traits of wild horses and wild cattle remain unaffected by reason of the entire absence of foreign blood, and when stock is in this state of nature there is the closest in-breeding. If then, such traits as these animals possess are perpetuated by keeping the blood close within itself, why may not the same system be expected to produce like results when applied to domesticated animals? Surely it may be; and experience shows that all the highly improved breeds have had imbedded in their constitutions the artificial peculiarities upon which their value depends, by the systematic exclusion of blood which might lead to divergencies, and by the rigid adherence to that blood which most conspicuously showed its possession of the desired form or power. This is "in-and-in breeding," and it is the only way in which such results can be attained.

It must be remembered that close in-breeding tends to refine and render delicate the constitution, and if persisted in too far, or beyond the limits here laid down, hereditary diseases and disabilities are sure to appear. Hence the breeder must be constantly on the alert to combat such tendency, in breeding pure animals.

BREEDING OF HORSES.

Sanders, in his valuable work on "Horse Breeding," says: "I have often referred to the heterogenous character of the horse-stock of our country, which is a conglomeration of every breed and type of the horse kind in the known world. Until very recently no intelligent effort has been made to keep any of the breeds pure except

the thoroughbred. We have crossed in and out, without rhyme or reason, until with the single exception of our thoroughbred horses it is scarcely possible to have the pedigree of any animal four generations back, without finding an admixture of all the various breeds and types that have ever been known. With such an ancestry it is not to be wondered at that disappointments meet the novice at every hand. He selects a fine-looking bay mare that will weigh 1,500 pounds, in moderate flesh, clean-limbed and strong, and he looks out for a stallion possessing the same characteristics, that he may couple the two together to produce a first class draught horse. He has been told that like produces like so often that he believes it, and the theory properly leads him to think that out of such a pair his hopes of producing draft horses may be realized. But he is disappointed; the produce is not like either of the parents and he pronounces breeding a lottery, and the decline or transmission of peculiarities a humbug. He forgets that heredity transmits with certainty only that which is firmly fixed in the ancestry and he loses sight of the fact that his fine large bay mare was herself the product of mixed ancestry. * * * * * The possession of the required qualities in the sire and dam was an accidental circumstance, and intelligent breeders with a knowledge of the fact would not expect that these accidental qualities should be transmitted with certainty." These words are full of the soundest sense and are an unanswerable argument in favor of the exercise of intelligence in the business of breeding live stock.

Why fine Horses do not Always Reproduce Themselves—A sire or dam possessing some strong characteristics will not transmit them if they are accidental. It may be found developed in the off-spring, but then it would be an accident as well. A stallion is known to have been very fast or very stout and breeders have supposed that they have only to send mares deficient in either quality and they would ensure its being developed in the produce. If the mare happens to possess, among her ancestry, stout or fast lines of blood, the produce will display the one or the other, if she is put to a horse possessing them; but if on the contrary, the lines of the dam are all fast, or all stout, no first cross with a sire possessing opposite qualities will be likely to have any effect, though no doubt there are some few exceptions to this as to all other rules. The instances in support of this position are numerous and conclusive.

What Mares are Best for Breeding—Neither a large nor a small sire will perpetuate himself, unless descended from a breed which is either one or the other. Many a mare has produced colts larger than herself, but investigation has almost invariably disclosed that her ancestry has contained animals above the average size. Moderately small mares are generally stronger of constitution than large ones, and for this reason—provided they are of the right mould—they will answer stud purposes better than others.

What Kind of Mares to use for Production of certain Grades of Horses—Breeding without an intelligent aim is somewhat of a lottery; but it need not be so if the breeder will commence with a definite end in view—any sort of animals whether cart or carriage animals, driving or trotting horses. The breeder should not use, if he can avoid it, a single mare whose dam and grand dam, as well as sire, were not good specimens of their kind. It is not insisted that acquired habits are always transmissible, but it is impossible to say when they become so, and when there is no predisposition in that direction; but the wisdom must be insisted upon, of care and circumspection on the part of breeders in the selection of the creation of their stud. Physiologists declare and experience proves that the transmission of acquired peculiarities is limited to what is simple modification of the natural constitution. The abnormal characteristics are inherited frequently, but they are not so certain of transmission as are the acquired traits which accord with the nature of the animal.

Health and Soundness Imperative—Too much stress cannot be laid upon the importance of health and soundness. All the great writers are forcible upon this point. In the application of the general laws which govern the transmission of hereditary qualities in the business of breeding horses, the first step is for the breeder to decide in his own mind what sort of horse he wishes to produce. If his fancy or interest lead him to breed horses for the race course, he must keep constantly in mind the fact that for this purpose, whether for running or trotting, speed and endurance of the very highest order are indispensable; and here the least unsoundness will prove fatal. In order to live through the severe ordeal of training, and the still more trying one of the "bruising" campaign, which taxes the utmost powers of the horse day after day, there must be no weak spots in his composition. There must be no soft spongy bones and joints; no brittle or contracted feet; no tendency to curbs, spavins or ringbones; no weak tendons or feeble limbs, in the horse that is to prove a profitable campaigner. No matter how much speed the get of any stallion may have shown, if as a rule they have proven seriously defective in any part of their machinery, he should be avoided as a sire by those who are breeding for the turf, whether as runners or trotters; for the race-course will speedily search out and bring to light the least taint of unsoundness or weakness in any part of the organization. Feet and legs, bones and tendons, joints and muscles, heart and lungs, brain and eye, must each do its part thoroughly in the successful race horse. There must be that nice adaptation of the machinery, and that fineness of texture in the material of which the machine is built, to enable it to withstand the strain that is put upon it, and which distinguished the great campaigners, like "Lady Suffolk," "Flora Temple," "Goldsmith Maid," English "Eclipse" and his great American namesake, from the flashy ones that blaze out for a single

season like a brilliant meteor and then sink into obscurity. It is this perfection of organism that enables the horse to stand up under preparation and training year after year, profiting by his education and improving with age, that makes the really valuable turf horse. It is a quality more valuable than speed, because whatever measure of speed it possesses can be depended upon and improved. These are the considerations that should influence breeders of horses for the turf, and no blind devotion to a particular pedigree, no mere promise of speed in a youngster got by a stallion, should induce us to overlook a prevailing tendency to unsoundness or lack of endurance in his get.—*Sanders on Horse Breeding.*

How Tendency to Unsoundness is Indicated—Tendency to unsoundness is not marked in any particular development of the animal economy, but the defect shows itself wherever the strain is greatest from the nature of the work the animal has to perform. Thus, the race-horse becomes a “roarer,” or his legs and feet give way. The draft-horse often becomes wind-broken, especially if his wind-pipe is impeded by his head being confined by the bearing rein. The road horse again suffers chiefly in his limbs from hard roads; while the cart horse becomes unsound in his hocks or his feet, the former parts being strained by his severe pulls, and the latter being battered and bruised against the ground from the enormous weight of his carcass. But it is among well-bred horses that unsoundness is most frequent, and in them it may be traced to the constant breeding from sires and dams which have been thrown “out of training” in consequence of a break down.

Marks of Horses Indicating Predisposition to Disease—Horses with narrow chests, upright pasterns, and out-turned toes, have a predisposition to disease of the navicular joints, and those with round legs and small knees to which the tendons are tightly bound are especially subject to strains. A disproportion in the width and length of the leg below the hock shows a predisposition to spavin, and a gambrel joint inclining forward shows a tendency to curbs. Many farm horses, as well as others without much breeding, are remarkable for consuming large quantities of food, for soft and flabby muscular systems, and for round limbs containing an unusual proportion of cellular tissue. These characteristics are notoriously hereditary, of which indisputable evidence is afforded by their existence in many different individuals of the same stock, and their long continuance even under the best management and most efficient systems of breeding. Such characteristics indicate proclivity to certain diseases, as swelled legs, and grease. Where the hock is narrow, a strain of the joint is very apt to result from work which, if the limb were properly proportioned, would not be severe.

How the True Excellence of Horses May be Distinguished—In taking up the details of horse-breeding it may be well at the outset to consider what constitutes the excellence

which is the objective point of breeding. This is admirably summed up by "Frank Forrester," in his "Hints to Horse Keepers." He says:

Now as to what constitutes the value or excellence in all horses. It is indisputably quickness of working power, to move or carry weight, and ability to endure for a length of time; to travel for a distance with the least decrease of pace; to come again to work day after day, week after week and year after year, with undiminished vigor. And it is scarcely needful to say that, under all ordinary circumstances, these conditions are only compatible with the highest form and the most perfect physical health of the animal. Malformation must necessarily detract from power and speed: hereditary disease or constitutional derangement must necessarily detract from all powers whatever. Under usual circumstances it would hardly be necessary to show that quickness of working, or in other words speed, is necessary to a high degree of excellence in a horse of any stamp or style, and not one iota less for the animal that draws the load or breaks the glebe, than for the riding horse or the pleasure traveler before the light vehicle. But it has of late become the fashion in some quarters to undervalue the advantages of speed, and to deny its utility for other purposes than those of mere amusement; and as a corollary from this assumption, to disparage the effect and deny the advantage of blood, by which is meant descent through the American or English race-horse from the oriental blood of the desert; whether Arabian, Barb, Turk, Persian or Syrian, or a combination of two, or more, or of all five.

The horse which can plow an acre, while another is plowing half an acre, or that which can carry a load of passengers ten miles while the other is going five—*independent of all considerations of amusement, taste, or what is generally called fancy*—is absolutely worth twice as much to his owner as the other.

What the Breeder Should Seek to Obtain—Now the question for the breeder is simply this: By what means is this to be attained? The reply is, by getting the greatest amount of pure blood, compatible with size, weight and power, according to the purpose for which he intends to raise stock, into the animal bred. For not only is it not true that speed alone is the only good thing derivable from blood, but something very nearly the reverse is true. It is very nearly the *least* good thing. That which the blood horse does possess is, a degree of strength in his bones, sinews and frame at large, utterly out of the common proportion to the size or apparent strength of that frame. The texture, the form and the symmetry of the bones,—all in the same bulk and volume—possess nearly double or nearly fourfold the elements of endurance and resistance in the blood-horse that they do in the cold-blooded cart-horse. The difference in the form and texture of the sinews and muscles, and the inferior tendency to form flabby, useless flesh is still more in favor of the blood horse.

The Constitution, or Vital Power—Beyond this the internal anatomical construction of his respiratory organs, of his arterial and nervous system—in a word, of his constitution generally—is calculated to give him, what he possesses, greater vital power, greater recuperatory power, greater physical power, in proportion to his bulk and weight, than any other known animal, added to greater quickness of movement, and to greater courage, greater endurance of labor, hardship or suffering—in a word, greater (what is vulgarly called) “pluck,” or “game,” than will be found in any other of the horse family.

But it is not to be said, or supposed, that all blood horses will have these qualities in an equal degree, for there is as much, or more, choice in the blood horse, as in any other of the family, since—as in the blood of the thoroughbred horse, all faults, all vices, all diseases, are directly hereditary, as well as all virtues, all soundness, all good qualities—it is more necessary to look in the blood horse to his antecedents, his history, his performances, and above all to his shape, temper, soundness and constitution, than it is in any other animal of the horse family.

Follies in Breeding—To breed from a small horse in the hope of getting a large colt; from a long-backed, leggy horse, in the hope of getting a short, compact powerful sire; from a blind or broken-winded, or flat-footed, or spavined or ring-boned, or navicular-diseased horse, with the hope of getting a sound one; from a vicious horse, a cowardly horse—what is technically called a “dung-hill”—with the hope of getting a kind-tempered and brave one; all or any of these would be the height of folly.

Traits in the Sire to Ensure Good Stock—The blood sire (and the blood should always be on the sire's side) should be, for the farmer breeder's purposes, of medium height, say fifteen and a half hands high, short-backed, well ribbed up, short in the saddle place, long below. He should have high withers, broad loins, broad chest, a straight rump—the converse of what is often seen in trotters and known as the “goose rump;” a high and muscular but not beefy chest; a lean, bony, well-set-on head; a clear, bright, smallish, well-placed eye; broad nostrils and small ears. His forelegs should be as long and as muscular as possible above the knee, and his hind-legs above the hock, the same; and as lean, short and bony as possible below these joints. The bones cannot by any means be too flat, too clear of excrescences, nor *too large*. The sinews should be clear, straight, firm and hard to the touch.

From such a horse, if the breeder can find one, and from a well-chosen mare (she may be a little larger, more bony, more roomy and in every way coarser than the horse, to the advantage of the stock), sound, healthy and well-limbed, he may be certain, accidents and contingencies set aside, of raising an animal that will be creditable to him as a scientific stock breeder, and profitable to him in a pecuniary sense.

What Qualities are Desirable in the Breeding Mare—"Blood from the sire and beauty from the dam," is an old axiom, and offers a good rule. The first things to be regarded in the mare are symmetry and soundness. Next, detail should be looked to: she should have a roomy frame, hips somewhat sloping; a little more than the average length; wide-chested; deep in the girth; quarters, strong and well laid down; hocks wide apart; wide and deep in the pelvis. Then the temper must be regarded: she should be gentle, courageous, and free from all irritability and viciousness. Previous to putting her to horse she should be brought into the most perfect condition of health—not overfed, nor loaded with flesh, nor in a pampered state, but by judicious exercise, abundance of food and proper grooming, she should be brought into the very best condition. Finally, during gestation she should have generous and nourishing but not heating diet. For the first three or four months she may be worked moderately, and even to within a few weeks of her foaling she may do light work with advantage.

The Chief Point to be Aimed At—The great point to be aimed at is, the combining in the same animal the maximum of speed compatible with sufficient size, bone, strength and solid power to carry heavy weights or draw large loads, and at the same time to secure the stock from the probability, if not certainty, of inheriting structural deformity, inability or constitutional disease from either of the parents. The first point is only to be attained: First, by breeding as much as possible to pure blood of the right kind; second, by breeding what is technically called among sportsmen and breeders, "*up* not *down*," that is to say, by breeding the mare to a male of superior (not inferior) blood to herself—except where it is desired to breed like to like, as Canadian to Canadian, or Percheron to Percheron, for the purpose of perpetuating a pure strain of any particular variety which may be useful for the production of brood mares.

Descent of the Great Trotting Horses—The trotting horse will reproduce himself—if there is a fast strain in his own blood—by being coupled with a speedy mare, if she also has speed in her descent. Sometimes speed will show itself when neither sire nor dam is fast, and there is no apparent purity of blood on either side. But all the great horses have "blood" somewhere, and the closeness with which they have been bred is proven by the fact that the entire race is the product of a few high-bred roots.

A brief consideration of the descent of the origin of the great trotters on the American turf will show of what careful breeding is capable:

MAUD S. (2:8½) descended from *Messenger*, and imported *Shark*.

GENERAL KNOX descended from the *Sherman Morgan*, united with *Messenger* blood.

TRINKET (2:14) possesses the same strain of blood as *Maud S.*; both are of *Messenger*, *Sourkrout* and *Pilot* blood.

POCAHONTAS, of *Messenger* descent.

MOUNTAIN BOY (2:20 $\frac{1}{2}$), of same blood as *Maud S.*, both descendants of imported *Bellfounder*, he three and she four degrees removed, and both of *Messenger* origin.

JOHN MORGAN (2:24; 2 miles in 5 $\frac{1}{2}$), of the *Pilot* stock, as are *Maud S.* and *Trinket*.

GOLDSMITH'S MAID* (2:14), of the same blood paternally as is *Maud S.* paternally.

LADY THORN (2:18 $\frac{1}{2}$) is of *Messenger* descent, as are *Goldsmith Maid*, *Pocahontas*, and *Maud S.* In her blood, too, is the American *Eclipse* strain, which is an emphasis of *Messenger*.

To Secure the Greatest Profit in Breeding—The economy of raising live-stock is an important matter to consider. The object is, of course, to get the greatest return. It is to be borne in mind that it costs no more to raise a first-rate colt than it does to raise a poor one; and the objection that farmers sometimes make that they cannot afford to pay a high price for the services of a first-rate stallion, is not a good one, because they cannot afford to have their mares served by a common horse at no charge at all. That is, they cannot afford it if they want to realize the most profit out of their breeding. Horses bred to pure blood are valuable not only for driving and for racing; they are more valuable for the ordinary work to which horses are put—for omnibuses and horse-cars in the cities, and for the ordinary work of the farm, and for work on the road,—than are any other horses, and there is no risk whatever in making the experiment or attempting to breed the very *best* sort of horses.

Treatment of the Mare in Foal to Secure Best Results—Upon the care which is given to the dam will depend in a great measure the condition of the colt. She should be allowed as large a quantity of food as will secure the best development of her offspring, and such also as shall keep her in good condition to supply her colt with proper food. The breeder should not allow his mare to remain without work; neither should he overwork her; but exercise and good care are as important to the mare when she is breeding as they are to the colt after he shall have been dropped. The mare should be allowed room-range in some field, or else her stall should be large and roomy so that she can take exercise enough, and she should never be subjected to any annoyance whatever after she shall have dropped her foal. If it is necessary to work her, as it sometimes becomes, her colt should not be allowed to run with her, and particular care must be exercised to see that the colt is

* The pedigree of this celebrated mare is worthy of study. She was very closely in-bred. Her grand-sire was *Rysdyk's Hambletonian*; he by *Abdallah*. Her maternal great-grand-dam *Amazonia* was the granddaughter of *Messenger*, which got *Membrino*, her great-grand-sire, so that *Abdallah* was the offspring of an uncle and niece. Her sire was the grandson of *Abdallah*, and her dam was *Abdallah's* daughter; in other words, they were uncle and aunt. There cannot be found many instances of closer in-breeding than this in America.

never allowed to suckle when the dam is over-heated. There is no period during the life of a horse when high food, carefully given, will have so good an effect upon his entire constitution, as the feed of the mare during the half years which precede and follow her foaling. The skin should be kept thoroughly open and clean. There is nothing more conducive to the economical care and to the health of the horse than taking good care of his skin, and no labor can be expended to greater profit than the daily grooming even of colts that are very young.

For care, feed and weaning of colts, and mares after foaling, see "Feeding Horses," page 625.

The Sire of Great Trotters—We can give no better illustration to emphasize the lessons which we have endeavored to convey upon the desirability of careful breeding to ensure the improvement of horses, than to give the list of the leading descendants of one great horse, "Rysdyk's Hambletonian," showing how potent is the influence upon offspring of thorough blood in a horse. All the progeny here given, of this horse, have a record below 2:20:

MAUD S.....	2:8 $\frac{3}{4}$.	ROSA WILKES.....	2:18 $\frac{1}{4}$.
ST. JULIEN.....	2:11 $\frac{1}{4}$.	MONROE CHIEF.....	2:18 $\frac{1}{2}$.
CLINGSTONE.....	2:14.	WILLIAM H.....	2:18 $\frac{1}{2}$.
GOLDSMITH MAID.....	2:14.	CLEORA.....	2:18 $\frac{3}{4}$.
HATTIE WOODWARD.....	2:15 $\frac{1}{2}$.	NUTWOOD.....	2:18 $\frac{3}{4}$.
DARBY.....	2:16 $\frac{1}{2}$.	ADELE GOULD.....	2:19.
EDWIN THORNE.....	2:16 $\frac{1}{2}$.	ALLEY.....	2:19.
JEROME EDDY.....	2:16 $\frac{1}{2}$.	EDWARD.....	2:19.
GLOSTER.....	2:17.	GRAVES.....	2:19.
DEXTER.....	2:17 $\frac{1}{2}$.	JAY-EYE-SEE.....	2:10.
PIEDMONT.....	2:17 $\frac{1}{4}$.	KITTY BATES.....	2:19.
SO-SO.....	2:17 $\frac{1}{2}$.	WEDGEWOOD.....	2:19.
SANTA CLAUS.....	2:17 $\frac{1}{2}$.	ALDINE.....	2:19 $\frac{1}{4}$.
DICK SWIVELLER.....	2:18.	BODINE.....	2:19 $\frac{1}{4}$.
GREAT EASTERN.....	2:18.	DRIVER.....	2:19 $\frac{1}{4}$.
JUDGE FULLERTON.....	2:18.	VON ARNIM.....	2:19 $\frac{1}{2}$.
NETTIE.....	2:18.	DAISY DALE.....	2:19 $\frac{3}{4}$.
ROBERT MCGREGOR.....	2:18.	ANNIE W.....	2:20.
FANNY WITHERSPOON.....	2:18 $\frac{1}{4}$.	ELAINE.....	2:20.
MIDNIGHT.....	2:18 $\frac{1}{4}$.	NANCY HACKETT.....	2:20.
PICKARD.....	2:18 $\frac{1}{4}$.	ORANGE GIRL.....	2:20.

The Record of Fast Speed—In connection with this subject, the record of the performances of the great trotting and running horses on the turf will not only be of interest, but will serve to illustrate the high standard of speed and endurance to which breeding leads up.

THE TROTTING RECORD.

HOW MADE.	WHERE MADE.	NAME OF HORSE.	TIME.
One mile in harness.....	Galesburg, Ill.	Alix	2:03¾
One mile to wagon	Independence, Ia.....	Allerton	2:15
One mile under saddle.....	New York, N.Y.....	Great Eastern...	2:15¾
One mile by a mare.....	Memphis, Tenn.....	Lou Dillon.....	1:58 2-5
One mile by a gelding....	Terre Haute, Ind.....	The Abbot.....	2:08¾
One mile by a stallion.....	Stockton, Cala.....	Stamborl	2:07½
One mile by a yearling.....	Stockton, Cala.....	Frou Frou.....	2:25½
One mile by a two-year-old.....	Stockton, Cala.....	Arion	2:10¾
One mile by a three-year-old....	San Francisco, Cala. } Nashville, Tenn.....	Sunol	2:10½
		Arion	
One mile by a four-year-old.....	Nashville, Tenn.....	Alix	2:10
One mile by a double team	Providence, R. I.	Belle Hamlin... } Honest George.. }	2:12¾

THE RUNNING RECORD.

DISTANCE.	NAME OF HORSE	WHERE MADE.	DATE.	AGE	WEIGHT	TIME
Quarter mile.....	Bob Wade.....	Butte, Mont....	Aug. 1890	4 yrs.		0:21¾
Three-eighths mile.....	Fashion	Lampas, Tex. ...	Aug. 1891	4 "		0:34
Half mile.....	Geraldine.....	N.Y. Jockey Club	Aug. 1889	4 "	122 lbs.	0:46
Five-eighths mile.....	Dr. Hasbrouck ..	" " "	Oct. 1892	4 "	122 "	0:57
Three-quarters mile.....	Yemen	" " "	Oct. 1892	3 "	105½ "	1:09¾
Seven-eighths mile.....	Bella B.....	Monmouth Park	July 1890	5 "	103 "	1:23½
One mile.....	Salvator	" "	Aug. 1890	4 "	110 "	1:35½
Mile and one-sixteenth....	Yo Tambien.....	Washington Prk	July 1892	3 "	99 "	1:45½
Mile and one-eighth.....	Tristan	N.Y. Jockey Club	June 1891	6 "	114 "	1:51½
Mile and three-sixteenths	Lorenzo	Chicago	Aug. 1892	4 "	104 "	1:59¾
Mile and one-fourth.....	Banquet.....	Monmouth Park	July 1890	3 "	108 "	2:03¾
Mile and 500 yards.....	Bend Or.....	Saratoga	July 1882	4 "	115 "	2:16½
Mile and three-eighths....	Ormie	Chicago.....	July 1890	4 "	105 "	2:20¾
Mile and one-half.....	Lamplighter....	Monmouth Park	Aug. 1892	3 "	109 "	2:32¾
Mile and five-eighths.....	Hindocraft.....	N.Y. Jockey Club	Aug. 1889	3 "	75 "	2:48
Mile and three-quarters....	Hotspur.....	San Francisco...	Aprl. 1891	5 "	117 "	3:00¾
Mile and seven-eighths....	Enigma.....	Sheepshead Bay	Sept. 1885	4 "	90 "	3:20
Two miles.....	Ten Broeck.....	Louisville	May 1877	5 "	110 "	3:27½
Two miles and one-eighth	Monitor	Baltimore	Oct. 1880	4 "	110 "	3:44½
Two miles & a quarter }	Springbok	Saratoga	July 1875	5 "	114 "	3:56¾
	Preakness.....	Saratoga	July 1875	4 "	114 "	
Two miles and a half....	Aristides	Lexington	May 1876	4 "	104 "	4:27½
Two miles & five-eighths	Ten Broeck.....	Lexington	Sept. 1876	4 "	104 "	4:58¾
Two miles & three-qu'trs	Hubbard	Saratoga	Aug. 1873	4 "	107 "	4:58¾
Three miles.....	Drake Carter...	Sheepshead Bay	Sept. 1884	4 "	115 "	5:24
Four miles.....	Ten Broeck.....	Louisville	Sept. 1876	4 "	104 "	7:15¾

BREEDING CATTLE.

General Principles—Under the head of "General Principles of Breeding" we have discussed at length the laws of generation which have a general application to all classes of domestic animals, and by which the successful breeder in any line of stock must be largely guided. It must be understood that the rules there given are not only mere rules; they are definite laws of nature and cannot be deviated from in any case when definite results are aimed at. The stock-breeder starting with one or more varieties in breeds of cattle, will naturally desire to keep his stock in at least as good condition as to blood and productiveness as he found it. If he is prudent, intelligent and ambitious, he will seek to make it better than he found it, knowing that the greater improvement he effects in these directions, the greater will be the profit of his business.

Absolute Essentials in Breeding Stock—If he has studied the principles of breeding to profit, he will realize that for animals that are to be retained for breeding purposes, he must look upon the following qualities as indispensable:

1. Sound health and freedom from constitutional, hereditary, chronic or local disease, blemish or infirmity of any kind.
2. As much perfection of form as may be possible to obtain in the breed, bearing in mind the chief purposes for which the animals are designed.
3. Uniform presentation of the strong and marked characteristics of their breed, in the various points belonging to it.
4. When of distinct breed, thorough purity of blood, substantiated by well-authenticated pedigrees, through as many generations back as can be ascertained.
5. Good temper, and a kindly, docile disposition.

The point of ancestry is of particular importance, for the more knowledge the breeder possesses upon that subject, the greater certainty and accuracy he can ensure in breeding for particular purposes.

In carrying out these rules, the breeder will require information upon certain points which all cattle of whatever breed should possess, and these will be found in detail under the head of "How to Purchase Live-Stock," page 573

In addition to these matters, the breeder must observe certain conditions as to care and feeding, fully laid down in the article on Feeding (page 625), which may be here summarized as follows:

1. Abundance of proper food at the various seasons, as grass, or its equivalent in spring, summer and autumn; nutritious and well prepared food in the winter, and plenty of good water *always*.
2. Regularity in feeding; no scantiness of allowance, but always enough without waste.

3. Shelter always available *when needed*, according to temperature of climate and atmosphere; avoiding extreme cold, violent storms and excessive heat.

4. Kind treatment, thus promoting docility in the animal, contentment of disposition and confidence in its keeper—all conducive to quietude and thrift.

How to Select Animals for Breeding—In *thorough* breeding, Allen says, the bull should always show his own masculine character, energy and vigor—no *cow* look about him. The cow should possess the softer and delicate points of her sex in their fullest development, and no masculine qualities should give her anything like a *steer-like* appearance. Sexuality, in the highest qualities, should be stamped on every feature on both sides. Good form and good appearance and good pedigree, on both sides should go together. As a rule, it is not well to rely upon pedigree alone; the appearance of the animal should endorse the pedigree, and when the good points of both form and pedigree are combined, they constitute excellence of the highest order. A sire or dam may be faulty in some minor particular of feature; but when that minor defect is surmounted by some prominent excellence in a more important or controlling one, the inferior point may be overlooked in securing the better one. Even apparent coarseness in some particulars, belonging to the sire or dam, may be excused when connected with good constitution and stamina, if either be coupled with one of the opposite sex having a tendency to over-fineness or exceeding delicacy. The vigor and apparent coarseness of the one will be corrected in the fineness of the other, or the opposite may occur, and the result be an almost perfect progeny.

Mis-mating as to Size—Extremes of size may be coupled together, except in great size of the sire and diminutive smallness of the dam. As a rule cows of small *breed* should not be bred to bulls of a much larger breed, for this reason: the fetus may partake more of the nature of the sire, and the growth thus require an undue amount of nourishment for the resources of the cow. In this event, the dam may not be able to deliver the calf, or the latter may be rendered liable to malformation destroying its value.

Rearing Bulls for Service—A bull intended for getting thoroughbred or grade stock should be well fed from birth, whether from the udder or the pail. There is no necessity for forcing—he will be rather the worse for it. This growth should be steady, and made on milk, a little oat, pea, or barley meal and hay or grass added for the first five or six months. If intended for grade or stock cattle, six months on milk will answer; if for breeding thoroughbreds, seven or eight months is better. After weaning, the food should be succulent and nourishing, but not rich. The practice of making “show” calves of young bulls is not a good one. It promotes maturity at the expense of lasting usefulness. He should be tied up at a week old, and taught to lead young. He should be

taught to eat herbage as soon as he will take to it, say at four or six weeks. At nine months, a ring should be put in his nose. The ring should be of copper, with a width inside of two and one half inches. As bulls are treated when young, so will be the duration of their usefulness. A yearling should only be used on extraordinary occasions, when a calf of his particular strain of blood may be required, and cannot be obtained by a postponement of his services. At the age of two years, he may serve fifty to a hundred cows during the season, not exceeding eight or ten services a week. At three years he may have full service, a hundred cows or more, without injury, and so on till he is twelve years old, or until his virility ceases. When the power of conception becomes uncertain, the bull should be put aside, as otherwise his uncertainty may descend to his stock. The bull should be always kept on substantial, nutritious food, and never suffered to become poor or fat, but always in good working order, in which condition he is a *surer* sire than if pampered or over-fed. When in service, if confined in a stable, he should have daily exercise, as it adds to his activity, stimulates his virility, and better insures the certainty of his procreation.

Treatment of Breeding Cows to Secure Good Results—When the cow comes in heat, care should be taken not to allow it association with inferior brutes, an ox or steer, for instance. She should be familiarized to the sight of the best of her kind. When the services of the bull are called in, she should be allowed to see the male animal fully and deliberately when introduced to him, and apart from the company of other cows. A single or at most a repeated service is sufficient, and immediately after the service she should be confined in her stall or a small enclosure by herself, till the heat passes off. If she is let out with other cattle, they only tease and worry her to no good, but frequently with positive injury. If the calf is to be bred for veal, or the cow is mated only for the milk supply, this is of no consequence; but when cattle of extra value are to be reared, this is of importance.

Duration of Pregnancy—The time of the pregnancy of the cow is not always uniform. Nine months is commonly the estimated time. It almost always runs so long, but usually longer, sometimes to even ten months. Two hundred and eighty days is given by some writers as the average time; others state it at two hundred and eighty-four. Allen, writing on American cattle, says he kept an accurate account in the cases of fifty cows, including thoroughbred Short-horns, Herefords and Devons, and their grades, and found the time to range from two hundred and sixty-eight to two hundred and ninety-one days, the average being two hundred and eighty-four days.

Care of Dam During Pregnancy—As the cow approaches maturity, she should be well kept, and if the climate demands it, have good shelter and a warm bed. If she has become reduced by scant feed, or profuse milking, she should have additional

feed while running dry, in order to promote the growth of the fetus within her and to better prepare her for the labor of parturition, as well as the sustenance of the coming calf and a good flow of milk afterward. No cow should give milk from the birth of one calf to that of another. It is too heavy a draft on her physical powers, and a period of six weeks to two months' rest from milking is necessary when the breeding of choice animals is an object. Some cows, we know, will yield their milk naturally from the birth of one calf to that of another; but it wears on them, and an abundance of the best food is necessary to keep them through so exhausting a process. A cow cannot well perform two such important duties at a time as to give a profitable flow of milk and mature, in the last stages of growth, a healthy, well-developed fetus. At that time, milk must be drawn at the expense of the coming calf. Of course this is not of so much importance when only the milk is looked to, but even then there must be a period of at least six weeks' rest. As the birth of the calf approaches she should be kept quiet, have gentle exercise, and be looked after carefully daily. Her udder a few days in advance should be watched and examined that it is not "caked" or inflamed, or secrete more milk than may be retained in a healthy condition. Some young heifers will secrete milk in advance for some days, in such quantities as to render it necessary to draw it from them to prevent the udder from spoiling with inflammation. When parturition is immediately expected, she should, according to the season, be confined in a loose box stall in the stable or under a shed, or in a small outside enclosure, where she may be readily seen and attended to in case of accident or difficulty, such as are liable to occur frequently with heifers in their first calf, and sometimes afterwards. When parturition is completed the udder should be thoroughly drawn by the calf and the process completed by the hand.

Abortion, or Slinking—The abortion of the fetus, is by some called a disease, for the reason that, from whatever cause, it seems to be spread by sympathy, and not infrequently large losses are thus encountered. It is sometimes singularly frequent in particular districts or on particular farms, having the characteristics of an epidemic. The cow is more subject to abortion than any other animal. It takes place at different periods of pregnancy, from half the usual time to the seventh or eighth month. The symptoms are: The cow is somewhat off her feed; rumination ceases; she is listless and dull; the milk diminishes or dries up; the motions of the fetus become more feeble and at length cease; there is a staggering walk; when she lies down she lies longer than usual, and when she stands up she remains a longer time motionless. On the approach of abortion (a symptom that rarely deceives), a yellow or red glairy fluid runs from the vagina, and breathing becomes laborious or convulsive. At length labor comes on and is attended with difficulty or danger. The cause may be consumption, too high feeding,

or rich pasture in spring after starving all winter; but the most danger is from sympathetic affection. The calf rarely lives and in a majority of cases is born dead or putrid. If there are any symptoms of aborting, the cow should be removed from the pasture to a shed. If the discharge is glairy, but not offensive, there may be hopes of avoiding the threatened abortion as the calf is probably not dead, of which assurance can be had by the motion of the fetus. The cow should be bled copiously, and a dose of physic given immediately after. Then give half a drachm of opium and half an ounce of sweet spirits of nitre. The beast should be allowed nothing but gruel and kept quiet. By these means the cow may frequently be got to her full time. To prevent the disease from spreading the fetus must be got rid of immediately by burying deeply and far from the cow pasture. The parts should be washed with a solution of chloride of lime and the cow-house disinfected by the same solution. On recovery the cow should be fattened and sold.

BREEDING FOR THE DAIRY.

Selection of Cows to Breed for the Dairy—Breeding of cows is divided into two distinct branches; breeding for the dairy, and breeding for beef. In breeding for the milk, dairy cows should be selected because of their known ability to yield milk largely. Milk dealers look more to quantity than to richness, and to supply their demand, large milkers should be selected. For butter and cheese dairies, cows which are rich milkers in those elements which butter and cheese require should be preferred, and in this the element of feeding largely influences. The breeder also should look for the particular breed for which his soil, climate and locality are best adapted. When the selection is once made it should not be changed, except for a definite purpose, and when it becomes necessary to introduce new blood into a herd by the selection of a new bull, the breeder should endeavor to combine the same qualities which have been cultivated in his herd; otherwise he will derange the uniformity at which he is presumed to have aimed.

Prolific Cows are Good Milkers—It is stated on the distinguished authority of Prof. Tanner that those animals which breed with the least difficulty yield the best supplies of milk, and produce the most healthy and vigorous offspring. It must be admitted that however much we have improved the symmetry and feeding power of stock, we have suffered them to deteriorate as breeding animals, wherever flesh has been aimed at the expense of the milking capacity. In proportion as we adopt the more natural system of management, for the purpose of keeping cattle in a healthy and vigorous breeding condition, so shall we reap the indirect benefit of a better supply of milk. It is true that a deficiency in the yield of milk may be met by other resources, but

since a short supply of milk is an indication of and associated with enfeebled breeding powers, every care should be taken to obviate this defect.

How Ancestry Affects the Quality of the Dairy Cow—Experience has shown that in cows the supply of milk depends not so much on either of the parents as on the mother of the bull which begets. This is stated by Sedgwick in the *Medico-Chirurgical Review* to be a fact beyond dispute, and he quotes also in support of this proposition the distinguished French authors, Bondach and Guion.

The Points Which are Desirable in a Dairy Cow—Mr. Elliott W. Stewart, a distinguished American authority, in his work on "Feeding Animals," makes the following suggestions, in regard to the selection of cows for the dairy, and no better guide can be offered. He says:

"Look *first* to the great characteristics of a dairy cow—large stomach, indicated by broad hips, broad and deep loin and sides, a broad or double chine—these indicate a large digestive apparatus, which is the first essential to the manufacture of milk. *Secondly*, a good constitution, depending upon the lungs and heart, which should be well developed, and this is easily determined by examination; but the vigor and tone of the constitution are indicated by the lustre of the hair and brightness of the eye and horns, and the whole make up. *Thirdly*, having determined her capacity for digesting surplus food for making milk, look carefully to the udder and the veins leading to it. The cow may assimilate a large quantity of food which goes mostly to lay on fat and flesh; but if she has a long, broad, deep udder with large milk veins, it is safe to conclude that her large capacity for digestion and assimilation is active in filling this receptacle. In fact, the udder is the first point to look at in a cursory examination of the cow, for nature is not apt to create it in vain. If it reaches to the back line of the thighs, well up behind, reaches well forward, is broad and moderately deep, with teats well apart and skin soft and elastic, it may be inferred that nature has provided means for filling it. Again, when you have found all these essentials, if the cow is five years old and does not yield 5,000 lbs. of milk per year, she is not worth possessing as a milker and breeder; yet, if the cow is five years old and actually yields 6,000 or more pounds of milk, you may safely buy her without regard to her points. She must digest the food to make it, and her machinery is so far above criticism. But the length of her period of giving milk must not be forgotten. This is a quality inherited as much as her capacity for quantity. A cow that, well fed, will not milk for ten months is not to be desired. A moderate and nearly uniform quantity, continuing for ten months, will produce a larger aggregate yield than heavy milking for a short period. Twenty-three pounds per day for ten months will give 7,000 lbs., while a short period of seven months will require thirty-three

lbs. per day. Nearly all the great annual yielders of milk will have long periods. This is a matter of so much consideration that a cow having a short period of milk-giving should be rejected as a breeder, as this would be inherited by her offspring. Still another important consideration in the selection of a common-blood cow is her pedigree. If you can find her descent from a large milking-dam, grandam or great grandam, this will greatly increase the probability of your success in breeding her to a thoroughbred bull from deep-milking ancestors. Now, a few cows selected with these requisites will lay the foundations of a herd of dairy cows such as will be a source of perpetual delight and profit to the owner. On the other hand, it is simple folly to rear a calf for the dairy from a poor milker. It is bad enough to keep an unprofitable cow for a season, but it is deliberately throwing away good food to breed from such a cow, with the proof before you that the heifer will never pay for her keep. Of course, no males will be kept of such crosses for breeding purposes."

Proper Age of Breeding Dairy Heifers—This must depend, to a great extent, upon the way in which they have been reared. If they have been fed on food which has made them strong and their growth has been developed without restraint, they may safely be served by a bull at eighteen months old. At such an age it is wise to select a small bull, because a young dam will be able to more perfectly supply the necessary sustenance while she is carrying it.

Reasons why Dairy Heifers should Breed at an Early Age—First, it brings her earlier to the service of the dairy; second, it makes her more inclined to be docile and handled easily; third, her milking faculty is more easily aroused than if its action be delayed, and the cow is likely to prove a better milker. But the dairyman who breeds thus early from his heifers, must give the stock good care and good food. Those who do not take special care of their cattle should not undertake to breed from them till they are three or four years of age. But the best dairy cows are made from heifers which calve for the first time before they are three years old.

Best Breeds of Cows for Milk—The Ayrshire is especially the cow of the milkman. She is small and developed in every point that shows a tendency to the yielding of large quantities of milk, and she is of that delicate organization, which, without exception, accompanies the giving of rich milk. Whether the farmer's business be the sale of milk or its manufacture into dairy products, the Ayrshire takes the lead in the list of pure bred cattle. For butter she is not inferior to any other in the quantity which may be produced.

THE DEVON has good characteristics, and may be classed as a medium dairy cow. She has the advantage of a calm temper, is

easily kept and not difficult to manage. She is also an easy milker.

THE JERSEY is *par excellence* the butter cow. The quantity which the Jersey cow yields is smaller than that of the Ayrshires. Short-horn milkers or Dutch cattle, but the milk is particularly rich in cream, and the richness of the cream itself and thoroughness with which the butter elements of the food are converted, have ranked the Jersey as the most profitable of all milch cows for butter farms.

DUTCH CATTLE, into which the Shorthorn inheritance largely enters, are large milkers.

THE HOLSTEINS are quick feeders and turn their feed into milk readily. Their value as milkers nearly approaches that of the Jerseys, and they are a profitable stock to breed from.

BREEDING BEEF CATTLE.

How to Select Stock for Beef Production—The main object sought in breeding cattle for meat is a constitution that will take on flesh rapidly and distribute it in the most advantageous way throughout the system. The selection of breeds should be subject to the same general rules in regard to climate, etc., as for dairy cattle. Cows should be selected from breeds which unite flesh producing qualities in the highest degree and should have more or less pure blood. The milk yield in these animals is not important, as a cow is not required to give more milk than sufficient to supply its calf for six months or so. The bull to lead a beef-producing herd should be of pure blood whatever the particular breed may be. He should be strong, vigorous, and a good specimen of his class, but not coarse. His bones should be fine, the hair upon his skin good and thick, and the flesh, as felt under the skin, elastic. His color is not important except as it may represent his breed. His flesh should be well laid on in the beef parts, and he should combine as nearly as may be the desirable points of a model of his breed.

To Ensure Good Results in Breeding — Young beef animals should be supplied with an abundance of good care and shelter and food and water, and cows and bulls should be always kept well, so that their condition shall be good; this is not so much on their own account as to protect their offspring from misfortune, because cattle produce flesh most rapidly and to the best advantage when they have good care, and the tendency of the parents in this regard will be inherited by the offspring. Such a bull as we have described can be used to the best advantage upon native cows, and a grade bull which has been bred carefully and with a defined purpose, will be almost as valuable to the beef-cattle breeder as a

thoroughbred. An inferior bull should never be used under any circumstances. Heifers should not be subjected to the bull at so early an age as for dairy purposes. Two years is young enough, for it is desirable that they have full opportunity to reach maturity and a fair size.

Proper Age to Slaughter Beef Cattle—Beef cattle should not be kept longer than four years. This is especially in regard to cattle of good breeds. They reach their proper ripeness at from three to four years of age. Short-horn, Hereford, throughbred, or high grades of stocks usually attain a weight of sixteen hundred to two thousand pounds during the fall and winter next preceding their slaughter, and lighter weight cattle fifteen hundred to sixteen hundred pounds. Up to this point, cattle may be profitably kept, but not longer, unless they are intended for exhibition. Common herds will not fatten so well at the age mentioned, but in reality, where the very best beef is sought or where the breeder is looking to the utmost return from his herd, these are really not desirable cattle to be fattened.

Value of Cross Breeding for Beef Production—

The crossing of native cows with well-bred stocks, where the sole object is beef, is desirable, as it enables these poorer classes of cattle to be turned to better account. This is illustrated forcibly by the experience of breeders in the State of Texas, where, according to the Report of the Superintendent of the Census, in 1880, the introduction of high-grade Short-horn bulls from Kansas and Missouri among the herds in the Pan Handle of Texas was attended with the utmost success, the second cross between such bulls and the Texas cows being estimated to average, in good herds, eleven hundred pounds at three and-a-half years old, while the native Texan steer of the same age could only be made to attain a weight of eight hundred and five pounds. But the report adds that the further improvement of the herds beyond the first cross of the Short-horn bull and the Texas cow is not deemed advisable, since the high-grade thus produced fails to thrive as well as the half-breed during the scarcity of feed, not being as good a "hustler" as the straight Texas or half-breed.

Best Breeds for Producing Beef—The first in the list of beef-producing animals is the SHORT-HORN breed. The Short-horns have the utmost merit as a flesh-producing animal, for they arrive at maturity at a very early age, and are perhaps the most desirable stock for the purpose of grading up a herd of common cattle. At three years a well-fed short-horn is fit for the shambles. His breed gives a quick return both for the feed and money invested, and is very desirable for the breeder.

THE DEVON is entitled to a place in the first rank, for the delicacy of the flesh and the fineness of its fiber. It matures early—as early as the Short-horn—and its meat is considered as having a finer grain, being more juicy, and lean and fat more desirably inter-

mixed. American butchers always prefer the Devons when they can be obtained. In the Southern States the Devon is the breed preferred to all others. They endure the climate favorably. They take food rapidly and easily, and they are more exempt from disease than some other stock.

THE WEST HIGHLAND cattle are considered very desirable in the English markets, and bring quite an amount more for their beef than ordinary breeds. This animal lays on flesh well in the desirable parts, and the fat and lean are mixed to great advantage. In his native country his high feeding commences at about three years. He has good summer pasture, with an allowance of meal and roots, and in winter is given plenty of straw; at four he is fit for the market. The fact that the Highland cattle have realized so well in their own country, and have such a high price as a food article when converted into beef, and their adaptation to cold and narrow food, makes them very valuable for the northern latitudes of the United States. The bulls have a decided prepotency, and transmit to their offspring when crossed with other breeds the same tendencies to flesh and hardihood that they themselves possess. This is an exceedingly desirable breed to be crossed with our native stock.

THE LONG-HORN is a good beef animal; he feeds well, and makes good returns from the butcher's flock; he is easy to handle, his skin has an elastic touch, and his tallow is good.

THE HEREFORD is a superior beef animal; at three or four years having had proper care, he is prepared for slaughter. In England, this beast has a great reputation as a true one for the grazier to keep. In the *American Agriculturist*, A. B. Allen says: "As fat cattle the Herefords have lately held a sharp rivalry with the Short-horns, and their beef is in high favor in the London markets. We think the stock at Albany would compare favorably with the best we have met of this breed in England. We found these cattle to excel particularly in the brisket and loin, two very important points in all animals destined for the butchers; and being of great constitution and hardy, they make most excellent grazing cattle." The Herefords have been introduced in the West, and are found to cross well in native stock, and with Texan blood. It is a good beef-producing breed, whether kept closely in-bred or crossed with other blood. It may not mature quite so early as the Short-horn, but the grazier might go further and fare worse when he is looking about for the sort of blood which he desires to introduce into his herd.

THE GALLOWAY is a good meat-producing breed, and, indeed, this is their main excellence, as they are not good milkers. They are as well-sized as the large common cattle of the country, and mature as early as the Herefords. Galloway bulls have remarkable prepotency, and are a desirable cross for native cows. This class are hardy breeders.

The stock raiser engaged in the production of beef cattle will find it profitable to study the department on "Feeding."

BREEDING SHEEP.

Breeds of Sheep—The Merino Saxon—These sheep are comparatively speaking tender, but they seem to be hardier than the parent German stock. In docility, patience under confinement, maturity and longevity they resemble the Merinos from which they are descended, but ordinarily do not mature so early nor live so long. They are poor nurses, and unless their lambs are sheltered and carefully watched they are more likely to perish, as they are smaller and feebler. They are lighter than the Merinos, consume less food, and do not fatten so well. The fleece will weigh on an average from two and a quarter to three pounds. The inferiority of the American Saxon wool to that of Germany is not due to climate or natural causes, nor to want of skill on the part of breeders. It is because few American manufacturers are willing to make the discrimination in prices which would render it profitable to produce this exquisite wool, and until American manufacturers are willing to pay as much for these wools at home as they do when brought from abroad, these sheep cannot be raised successfully in this country.

The Bakewell or Improved Leicester—This is a large-sized sheep, but smaller than the Leicester, of which it is an improvement. It fattens readily when food is plenty, but will not bear hard stocking, nor can it "hustle" for food. It is peculiarly a lowland sheep and should have luxuriant herbage, when it will mature early. Its wool is of a good combing quality and makes fine worsteds. The fleece of this sheep will weigh about six pounds, but is not in favor in cloth manufacture. Its mutton is of good quality but lacks flavor. This sheep can only be recommended on rich lowland farms, in the vicinity of profitable markets.

The Best Sheep for Mutton is the healthy and hardy Southdown, which endures the American winters well, and is an admirable sheep for crossing with natives for the production of mutton. The ewes are prolific breeders and good nurses. In a good Southdown the wool is short, close, curly and even, free from spiry projecting fibres. It is cultivated principally for its mutton. Its early maturity and extreme aptitude to lay on flesh render it peculiarly valuable for this purpose. High fed wethers have reached thirty-two and even forty pounds per quarter.

The Improved Cotswold, which has been successfully used for cross-breeding in this country, is a large breed with long and abundant fleece, and the ewes are very prolific and good nurses. The wool is strong, mellow and of good curl, though rather coarse, six to eight inches in length and weighing from seven to eight pounds per fleece. The quality of the mutton is superior to that of the New Leicester, with which it has been crossed to advantage, the tallow being less abundant, with a larger development of muscle or flesh.

In America, selection of breeds for mutton usually lies, according to the best authorities, between the Southdown, New Leicester and Improved Cotswolds.

Best Sheep for Large Herds—If it is desirable to keep sheep in large numbers, the Southdown will herd better than the others. If the feed is liable to become short during the summer and there is not a certainty of the supply of the best winter feed, the Southdown will endure short keep with less injury than other breeds. If the market calls for choice and high-flavored mutton, the Southdown possesses a decided superiority. It will live and thrive where the long-wooled sheep will dwindle away. They appear to travel better than the long-wooled sheep and they better fulfill the conditions of a mutton sheep in size and other particulars.

What Sheep are Superior for Wool—For the production of wool only, none of these varieties seem able to stand comparison with the Merino in this country. According to estimates that have been made by experiment, the herbage of an acre that would yield fifteen pounds of Merino wool, will give but twelve pounds of Leicester and nine and three-fifths pounds of Southdown wool. The Leicester is no hardier than the Merino; indeed, experience seems to indicate that it is less hardy. Under most favorable circumstances it is more subject to colds and its constitution breaks up more rapidly under disease. Its lambs are more liable to die from exposure under unfavorable circumstances; herded in large flocks, pinched for food, or subjected to long journeys, its capacity for endurance and its ability to rally cannot compare with those of the Merino.

Comparative Values of Different Breeds—The high-bred Southdown is the only sheep which seems able to stand on a footing of equality with the Merino. It is questionable if it will bear as hard stocking as the Merino does without diminution in size and quality; but it has peculiar merits both as a mutton and wool producing sheep and is also a very prolific breeder. The Improved Cotswolds are hardier than the Leicesters; they are prolific and make good grazing animals. Prize animals of this breed have been known to reach three hundred pounds; they are large feeders and their size renders it necessary that they should have a large quantity of food. The coarse-wooled sheep have one advantage over the Merino, because their hoofs do not grow so long and thus hold dirt and filth in constant contact with the foot, and they are therefore less subject to foot diseases, and when contracted the disease spreads among them with less violence and malignity. The coarser woolled sheep are superior to the Merino for purposes of mutton, but the authorities do not admit that this is true to so great an extent as is generally claimed. The mutton of the cross between the Merino and the native sheep will be found preferable to that of the Leicester for consumption in America. It is short-grained, tender and of good flavor, and this may be said also of other Eng-

lish varieties. Grade Merino wethers (say half bloods) are the favorites with the northern drovers and butchers. They are of good size, of extraordinary weight in proportion to their bulk, on account of the shortness of their wool, as compared with coarse-breeds; make good mutton and tallow; while their pelts from the greater weight of wool on them command an extra price.

Crossing of Merinos with Southdowns and Leicesters—The value of the Merino—the breed to which the American wool-grower has to look for his most profitable sheep—for crossing with the native stock has been alluded to. Experiments have also been made in crossing with the Southdowns and Leicesters, with the result in the former case, that the Southdown disposition to take on mutton manifested itself, even to the third generation, which is seven-eighths Merino and one-eighth Southdown. The fleeces are lighter than the Merino, but increase in weight with each cross backward to the Merino blood. The mutton is of delicious flavor and retains some of the superiority of the Southdown mutton. The cross with the Leicester is not so profitable, but the wool produced is shorter, finer and more compact than that of the Leicester and the sheep showy and profitable, being well calculated to please most farmers. These are experiments and are not offered as a guide. The farmer will do better to cross the common sheep with either of these breeds, according as he may desire to produce mutton or wool.

How Sheep are to be Bred Up—The breeder should first decide whether it will pay him better to raise sheep principally for wool or for mutton. The resources of his farm, the cost of feeding and the prominent advantages of the most available market, indicating in which direction the greater profit may be sought, will enable him to settle that point. Then if he elects to choose wool-farming, he should select good grade or common ewes and breed from the purest Merino ram from which he can get service. Then by a careful system of in-breeding he can steadily perfect his flock to the best standard, reserving for breeding purposes those sheep which show the highest points and disposing of the others. The breeder must give attention to detail and work with a definite object. He should mate so as to supply the defective points in one animal by prominent excellence in that particular point in the one of opposite sex. The results in these respects will amply justify the wisdom of careful selection. If the ram is long-legged, a short-legged ewe should be selected for him. If his wool is gummy, a dry-wooled ewe should be mated with him. If the fleece is a trifle below the proper standard of fineness, but the ram has been recommended for weight of fleece and general excellence, then he should be put upon the finest and lightest fleeced ewes. Having a selection of rams, this system of counter-balancing would require no great skill, if each parent possessed one point. Then by in-and-in breeding, rendered free from objection by the system recommended in the general article on breeding, he can select the best results of his work

and improve his flock up to almost any required standard. The same course will be followed for mutton. Taking a grade Merino or common ewe, it will be crossed for improvement in mutton with the Southdown, Improved Cotswold or New Leicester, and by careful attention to the practice laid down for his guidance, he will soon have a flock which will be a source of pleasure and profit to him.

Care of Ewes in Lambing—Much care and watchfulness are required in attending to the sheepfold during lambing time. If the weather is warm and pleasant and the nights not cold, it is better that the lambing take place in the pasture. Sheep are more disposed to own and take kindly to the young than in the confusion of a small enclosure. In cold weather, however, shelter for that purpose is necessary. The shed or enclosure for yearning should be kept clean by frequent litterings of straw; but not enough to embarrass the lamb in rising, as in a dirty enclosure the lambs get fouled in their first attempts to rise, and the ewe refuses to lick them dry, which increases the danger of freezing. The ewe does not often require assistance in lambing. The labor will sometimes be prolonged for three or four hours, but if let alone nature will generally relieve her. The objection to interfering, except as a last resort, is that the ewe is frightened when caught and her efforts to expel the lamb will cease.

Care of the Young Lamb—While the lamb is tumbling about and attempting to rise, it is best to be in no haste to interfere. A lamb that gets to the teats without help and gets even a little milk will generally be able to take care of itself. If helped, it will continue to expect it and do but little for itself for two or three days. The same is true when lambs are fed from the spoon or bottle. But if the lamb ceases to make efforts to rise, particularly if the ewe have left off licking it while it is wet and dirty, it is time for the shepherd to render his assistance. It is better not to throw the ewe down, but to put the lamb to the teat in the natural position. The young lamb is usually exceedingly stupid and patience is required. Sometimes milking a little into the young lamb's mouth, holding the latter close to the teat, will induce it to take hold.

Supplying Alternative Food—If the ewe has no milk the lamb should be fed until the natural supply commences with small quantities of the milk of a *new milch*-cow. This should be mixed, say half and half, with water—with enough of molasses to give it the purgative effect of the first milk—gently warmed to the natural heat (not scalded and suffered to cool), and then fed through a bottle with a sponge in the opening of it, which the lamb should suck, if it can be induced to do so. If the milk is poured from the bottle or a spoon into its mouth, it is frequently afterward difficult to induce it to suck, and moreover unless milk is poured into the mouth slowly and with great care—no faster than the lamb can swallow—a speedy wheezing, the infallible precursor of death, will

show that a portion of the fluid has been forced into the lungs. Lambs are frequently killed in this way.

How to Treat Lambs in Various Emergencies—If a lamb becomes chilled, it should be wrapped in a woolen blanket and placed in a warm room—giving a little milk, as above directed, as soon as it will swallow. A trifle of pepper may sometimes be placed in the milk to rouse the torpid stomach to action. An old custom in the New England states is to “bake” the sheep, as it is called—put it in a blanket in a moderately heated oven, with the door open of course, till warmth and animation are restored. Others immerse it in tepid water, and then rub it dry. This is said to be an excellent method when the lamb is nearly frozen. A good blanket, a warm room, with sometimes gentle friction, will generally suffice. If a ewe with a strong bag of milk chances to lose her lamb, she should be supplied with the twin of another or the lamb of a weaker or young ewe. Sometimes the skin is taken from the dead lamb and sewn upon the lamb she is required to foster. After she has well taken to it, the false skin may be removed. If no lamb is supplied, the milk should be drawn a few times, or garget may ensue. When milked it is well to wash the bag for some time in cold water. This checks the subsequent secretion of milk as well as abates inflammation. Young lambs are subject to what is technically called “pinning”—that is, their first excrements are so adhesive and tenacious that the orifice of the anus is closed and subsequent evacuations prevented. The adhering matter should be entirely removed with a sponge and warm water, and the part rubbed with a little dry clay to prevent subsequent adhesion. Lambs will frequently perish from this cause if not looked to for the first few days.

Weaning Lambs—Lambs should be weaned at four months old. It is better both for the young and the dam. When taken away they should be put into a distant field away from the ewes so that they cannot hear each other's bleating. The lambs when in hearing distance of their dams continue restless much longer, and they make constant and frequently successful efforts to crawl through the fences which separate them. One or two tame old ewes should be turned into the enclosure with them to teach them to come at the call, find salt when thrown to them, and eat grain, etc., out of the trough as winter approaches. The dams, on the contrary, should be put upon short, dry feed, to stop the flow of milk. The udder should be looked to occasionally; if greatly distended it should be relieved once or twice by milking, and washed with cold water. When properly dried off, they should be given good food to recruit and get in condition for the winter.

Emasculation and Docking—These should usually precede washing, as at that period the oldest lambs will be about a month old, and it is safer to perform that operation when they are about a couple of weeks younger. Dry pleasant weather should be

selected. Castration is a simple and safe process: clip off the end of the pouch, free the testicle from the enclosing membrane, and draw it out or clip the cord with a knife if it does not snap at the proper place. If the weather is very warm a little salt may be dropped into the pouch. An ointment of tar, lard and turpentine may be applied and also to the stump of the docked tail, but they will generally do as well without any application. Cut the tail off with a chisel on a block, an inch and a half from the body, drawing up the skin so that it will cover the stump after it is severed. It may occur to some, unused to keeping sheep, that it is unnecessary to cut off the tail. If left on it is apt to collect filth, and if the sheep purges, to become an intolerable nuisance.

Rams—The period of gestation in the ewe averages five months. Merino rams are frequently used from the first to the tenth year and even longer. The lambs of very old rams are not supposed to be as vigorous as those of younger stock, but where the rams have not been overtasked and have been properly fed, there will be really very little difference. A ram lamb should not be used, as it retards his growth, injures his form and impairs his vigor and courage. A yearling may run with thirty ewes; a two-year-old with forty to fifty, and a three-year-old with fifty to sixty. Powerful, mature rams will serve seventy or eighty, but it is to be remembered that an impoverished or overtasked animal does not transmit his individual properties so decidedly to his offspring as one in full vigor. It is bad husbandry to have several rams running in the same flock, as they excite each other to unnatural and unnecessary activity, besides injuring each other by blows. Besides, it is destructive of careful and judicious breeding, as the nice adaptation of the male to the female, to counteract defects by points of excellence, which has been described and is necessary to the best results, cannot be accomplished when there are half a dozen or more rams running promiscuously with two or three hundred ewes. Before the rams are let out, the flockmaster should have all the breeding ewes brought together into one yard, and an examination should be made of the points of different lots, which should be marked so as to show by what ram they have been served, and then placed in separate enclosures. The rams should be selected, with the view to perpetuate the excellences of fleece and carcass of the ewes, and to counterbalance defects. In four weeks time the rams may be withdrawn and the flocks then arranged as desired for the winter. Rams will do better, accomplish more, and last two or three years longer if daily fed with grain when in service, and it is well to follow it, gradually decreasing the quantity, for a short time after withdrawn from the ewes. A ram, when worked hard, should receive from half to a pint of oats daily, or its equivalent. They may be taken out of the flocks at night and shut up in a barn or stable by themselves, with saving to their strength. Rams should not be suffered to run with the ewes over a month, at least at the

North. It is better that a ewe go dry than that she have a lamb after the first of June. And after the rutting season is over, the rams become cross and frequently strike the pregnant ewes dangerous blows with their heavy horns.

How Flocks Should be Divided—If sheep are shut up in small enclosures during the winter, according to the Northern custom, it is necessary to divide them into flocks of about one hundred each, to consist of sheep of about the same size and strength. Otherwise the strong will rob the weaker and the latter rapidly decline. This is better even in summer, as the poorer and feebler can thus receive better pasture or a little more grain and shelter in winter. By those who grow wool to any great extent, breeding ewes, lambs and wethers are invariably kept in separate flocks in winter, and it is best to keep yearling sheep by themselves with a few of the smallest two-year-olds, and any old crones which are noted for their excellence as breeders, but which cannot maintain themselves in the flock.

Clipping the Hoofs—The hoofs of fine-wooled sheep grow rapidly, turn up in front and under at the sides, and must be clipped as often as once a year, or they become unsightly and accumulate filth, and if it does not originate the hoof-evil, as claimed by some, greatly aggravates it and increases the difficulty of curing it. Clipping may be advantageously done at washing time while the hoof is clean, and the horn softened. They should be cut by toe nippers, or a chisel and mallet, and pared to the level of the soles with a sharp knife—the closer the better so long as it does not bleed.

Time for Washing Sheep—This is usually done in the North about the first of June. The climate of the Southern states will permit of its being done earlier. The rule should be to wait until the water is warm enough for bathing and cold rains and storms and cold nights are no longer expected. The washers should be strong and careful men, and the sheep should be quickly but thoroughly washed, taking care not to keep the animal long enough in the water to give a chill. It is a great object, not only as a matter of propriety and honesty, but of profit, to get the wool clean and of a snowy whiteness. It will always sell for more than enough extra in this condition to offset for the increased labor and diminution of weight.

Proper Time Between Washing and Shearing—This will depend altogether upon circumstances. If the weather is bright and warm, four or five days will suffice. If cold and rainy, and cloudy, more time must elapse. The rule is that the water should be thoroughly dried out, and the natural oil of the wool so far exude as to give the fleece an unctuous feel, and a lively, glittering look. If you shear it when dry like cotton, you cheat yourself in weight, and the wool will not keep so well for long periods.

If you leave it till it gets too oily, you will either cheat the manufacturer, or what more often happens, you will lose in the price.

BREEDING HOGS.

Breeds of Hogs—The Berkshires—We have no native American hogs, strictly speaking, as originally the entire species came from Europe, and in great part from the British Isles. The **IMPROVED BERKSHIRES** were introduced into the United States about 1830, and within ten years had been carried into every State in the Union. When first introduced they created quite a furore among the breeders, but complaint was subsequently made that they were not large enough. Still it was not infrequently found that Berkshire thoroughbreds and their grades dressed four hundred pounds at a year old, and that at eighteen or twenty months they could be made to weigh from five hundred to six hundred pounds dressed. The demand however was for larger hogs, and a reaction set in with somewhat of prejudice against the breed.

The Improved Essex to a large extent took its place. This breed, English writers declare to be one of the best products of the small black breeds, but beyond doubt it has been greatly improved as to the size and condition by the Berkshire cross. It somewhat resembles the latter, and is well calculated to produce pork and hams of the very finest quality. It occupies in the black breeds the same place that the Cumberland Yorks do among the white; and the improved Essex is sure to improve the product of any dark-colored sow. Originally the Essex hog was a part black, part white, black, with white shoulders, nose and legs. Lord Western by crossing with the Neapolitan brought from Italy. The improved Essex was introduced in breeding in the Neapolitan cross, and it is undoubtedly as fine as any that can be found in the United States or England at this day. Early maturity and excellent quality of flesh are among the merits of the Improved Essex. They produce the best "jointers," and with age attain good weight, frequently making five hundred pounds at twenty-four months old. This breed is invaluable as a cross, being used to give quality and early maturity to any breed. The defect, if it is such, of the Improved Essex is a certain delicacy or an excessive aptitude to fatten, which, unless carefully counteracted by exercise and diet, often diminishes the fertility of the sows, and causes difficulty in rearing the young.

The Large Yorkshire—The Yorkshire breed enters very largely into the composition of some of the best breeds we have, and which as in a sense new breeds will be considered by themselves. It is believed to be the most thoroughbred hog known. It is the most valuable swine to cross with for these reasons: 1. They are of the size, shape and flesh that are desired for the family or the

packer's use. 2. They have a hardy, vigorous constitution and a good coat of hair, protecting the skin so well that it hardly ever freezes or blisters, either in extreme cold or hot weather. 3. They are quiet and good grazers, and fatten well and quickly at any age. 4. They are prolific and good mothers, and the young never vary in color, and so little in shape that their form when matured may be determined in advance by an inspection of the sire and dam.

Chester County Whites—This is the best known and most popular breed of pigs perhaps in the United States. It is large, rather coarse, hardy, of sound constitution, and well adapted to the mode of business to which most farmers are accustomed. A desirable cross is a Chester White with a thoroughbred Essex, Berkshire or small Yorkshire boar. If the first cross does not yield pigs which have a sufficient refinement, and the tendency to early maturing and rapid fattening which is sought, the best sows of that litter should be selected for breeding and themselves crossed with a thoroughbred, when the best results may be looked for. If it is desirable to raise pigs which may be slaughtered at the age of four or five months the second litter may be again crossed as before to good advantage. Hog breeders ordinarily consider that this is as far as in-and-in breeding should extend.

Cheshire or Jefferson County Hogs—These are white hogs, quite as large as the Chester and decidedly handsomer, and distinguished by fine hair, short snout, well-developed jowl, and small bones. It is claimed to be a breed originated in Jefferson County, N. Y., but is decidedly a derivative of the Yorkshire breed. It is valuable to cross with the Chester, and also with the Berkshire, but the product will not be so large as with the latter. *Wm. A. Wood*, editor of the *National Live-Stock Journal*, writes, "I regarded them as among the best of hogs. They were well haired, had a very delicate pink skin, and their meat was excellent, tender and juicy."

The Poland-Chinas—This is a favorite breed with the farmers of the Northwest and West. Aside from all the prevalent disputes as to its origin, the fact remains that it is one of the best getters of good pork hogs, and that it can be relied upon to answer the purposes which the pork raiser has in view, in size, mildness, strength and constitution, while in prepotency as to color and feeding qualities, it has no equal. It can be crossed to good advantage with well-bred Berkshires. Poland-China sows produce what are said to be as good feeding and fattening hogs as can be found in any country, when crossed with well-bred Berkshire boars. In his valuable work on "The Hog," Dr. Chase says, concerning this breed, that while he would not deem it wise for a small farmer, or one who fattens but a few hogs each year, to keep Poland-Chinas, the farmer who raises and fattens from twenty to one hundred head a year, or more than that number, cannot, in his judgment, find a hog which is superior to this breed. Coburn, in his book on "Swine

Husbandry," expresses the correct idea of this breed in the following forcible manner: "Controversies as to the precise crosses, and by whom or under what circumstances they were made forty years ago, to form the breed of hogs now known as the Poland-Chinas, may be of interest to a few; but what is vastly more important to millions of people is the fact that there has been produced a race of swine, now bearing that name, which very many severely practical and intelligent men consider the best pork-producing machines known, in fact nearer to what the farmers of the great West need than any other single breed in existence."

How to Breed Hogs—First Essential—The first thing for a farmer who desires to breed hogs is to select his boar. In this, he should first decide upon the breed of animals which he desires to raise, and the purpose of breeding. If he desires to raise stock to sell for their breed, he must have thoroughbred boars to couple with thoroughbred sows. If breeding for the market, he should secure a thoroughbred boar or the services of one, and cross with sows of good grade, that will produce either pigs that will mature early, or stock that will reach a large growth. The characteristics of the different breeds as above given will guide him in this respect. A breeder wishing to keep his sows fifteen to twenty months cannot do better than to select a good-sized, strong, somewhat coarse sow, having more or less of the Chester blood. Serve such a sow with a well-bred Essex, Berkshire or Yorkshire boar. It never pays to use a common boar.

How to Manage the Breeding Sow—Pigs cast early in the spring need not suckle more than five or six weeks, and a sow properly taken care of will take the boar again within a week after her pigs are weaned. The breeding sow should have the run of pasture during summer, and if this does not give her all she seems to need, she should have swill or milk with a few ears of corn daily. She should not be made too fat, but should have plenty of exercise, and be kept in just good condition. If she feeds her pigs well, they will get the benefit of nearly all the fat she would accumulate before they are weaned.

Care of the Young Litter—A couple of weeks before pigs are expected, the sow should be put into a pen where she can be alone at night, so that she will become familiar with the place. She should be allowed to run in and out in daytime, but should not be fed in the pen. If the sow is in good condition, she will have no trouble in dropping her young, which will come strong and undoubtedly suckle within a few minutes after birth. She should have all the milk or slop she can take as soon as she gets up. After the sow has eaten and gone back to her bed, it is well to notice whether there is any sound from the young pigs to indicate whether she is lying on them or not, and then they can be taken care of. During the first ten days give her no grain. For further

information on the care of the sow and the young pigs, see article on "Feeding," page 649.

Castration—If the pigs are not of pure breed none of them will be kept for breeding purposes. Of the sows, pick out as many exhibiting the best points, as it is desirable to keep for breeding. The male pigs should be castrated when from five to seven weeks old, and the sows will fatten better, reach a better weight, and make better pork if spayed. The time for this operation is about ten days before weaning.

Weaning—If the sow is not in good condition, weaning should take place at two months; if she is, then nine to twelve weeks will be the proper time. After weaning, the young pigs should be put in a clean, well-ventilated and *wind-tight* pen, which should be kept dry and supplied with enough straw to enable them to bury themselves in it. With pigs, warmth is almost equivalent to food.

Importance of Soundness in Breeding Hogs—Perfect health of the parent animals is essential to successful breeding. It is absolutely indispensable. The slightest manifestation of tendency to disease should lead to rejection of either sow or boar. If the pigs show a tendency to disease and the parents appear healthy, there need not be any doubt in drawing the conclusion that there is some disease in the parents which is not apparent, and the offspring should not be allowed to breed in their turn, but should be fattened and sold.

Management of Thoroughbred Stock—Thoroughbred pigs should be allowed plenty of space to roam over. The best authorities on the management of hogs say that it is not wise to try to breed more than one kind of thoroughbred stock on the same farm. The greatest care must be exercised to keep out from the breeding pens poor stock, that is animals which are not healthy and vigorous.

Management of Hogs Kept for Breeding—There should be two boars at least for service, as a boar should not serve more than seventy-five to ninety sows in a season. A young boar should be well fed, but not allowed to get too fat. If he shows too much fattening tendency, give him still enough to eat, but reduce the quality of his food. At eight or nine months he may serve sows, but not so many as to injure his growth. One service of a sow is enough, for if you let him go to the sow as often as he wants to, he only wastes his energy while injuring the sow. A full-grown boar will not require as rich food as a growing one. He may serve from the middle of October until December from twenty to thirty sows, and as many in the spring. If the boar is exceedingly valuable and it is intended to keep him for breeding for a number of years, he should not serve more than twelve to fifteen sows in a season. If it is intended to castrate and fatten him as soon as the season is over, he may have all the sows he will go to. Generally,

it is more profitable to fatten and castrate a boar at three years than to keep him longer, but this must depend largely upon his value and the possibility of replacing him. If the breeding sow has been farrowed in March, grows well, and is of an early breed, she may be served by the boar when she is eight months old. This early age might not do for ordinary stock ; we refer to breeds that are intended expressly for breeding purposes, such as it is the interest of the farmer to keep for that object. It does not hurt a sow which is strong and healthy, with digestive powers in good order, to have a litter of pigs when she is a year old, and for the next two or three years she may have two litters a year.

BREEDING EITHER SEX AT WILL.

James Black, of Baltimore, Md., states in his report to the Agricultural Fair that he had been testing for ten years this German system of regulating the sexes at will. He says he made his cattle breed bulls or heifers as he wanted them, and considers the system a complete success with all animals, and of inestimable value in all kinds of stock raising, especially that of blooded stock.

THOS. C. ANDERSON, OF LOUISVILLE, KY., SAYS, "I HAVE BEEN REGULATING IN ADVANCE THE SEXES OF MY COMING YOUNG STOCK IN ACCORDANCE WITH THE GERMAN SYSTEM AND I KNOW OF SEVERAL OTHERS WHO TRIED IT AND WHO REALIZED THEIR MOST SANGUINE EXPECTATIONS.

DIVISION FIFTEENTH.

FEEDING LIVE-STOCK.

The subject of feeding embraces a very large and a very important proportion of the economy of stock-breeding, on whatever scale it may be conducted. The object of the producer is, of course, to obtain the greatest return in value for his investment and the outlay thereon, in the live stock to which he devotes his attention. No amount of care and attention to breeding will ensure the best results without a corresponding care and attention to the matter of feeding, and it is just as essential to success, in the one case as in the other, that the work be governed by system and intelligent purpose. The importance of this cannot be over-estimated, and the information here conveyed, compiled from the highest authorities and epitomizing rules derived from the experience of the most prominent and successful breeders, will, if applied by the reader to the general management of his stock, be found of the greatest value and profit. Every farmer knows the value of his own experience, and is always ready to profit by that of his neighbors; but they are sometimes led by want of consideration to underrate the importance of that which is conveyed in a book. It should be understood that the knowledge contained in these pages is not mere book knowledge. It is on the contrary but the formulated experience of many practical and successful men in the different branches of stock-raising, acquired in a large measure by costly experiments, which no ordinary agriculturist can afford to make for himself, but which, if he possesses intelligence and appreciation, he can adapt to his own profit and benefit. Care has been exercised that everything herein contained is of real, substantial and practical value, and no one who is not so engrossed in that unprofitable self-wisdom, which shuts its eyes upon the advantages of improvement, can fail to derive from these pages, in one direction or another, the means of increasing the income and reducing the cost of whatever branch of stock-raising he may be most concerned in. Often a single item will prove of more value to him than the cost of the book.

FEEDING OF HORSES.

No other animal requires greater care, and none will yield a larger return therefor, than the horse. The first suggestion of the question "How shall the horse be fed?" is that the demand made upon the muscular system of the horse is greater than upon that of

any other domestic animal, and this in feeding has to be steadily borne in mind. It will be patent then that the food given shall have the definite purpose of supplying what the animal constitution requires to repair its waste, and to maintain health and strength in every organ of the physical structure.

Feed for Mares While Carrying Foal.—The pasture of the mare while carrying foal should not be so rich as to tend greatly to fat, as this often creates liability to miscarriage, while, on the other hand if too little nutritive food is given, the foal will be starved in its fetal growth. Mares which have always been used to corn or oats, should after they are six months pregnant receive a feed or two daily. Half-bred mares, during the latter part of gestation, should have chaff and corn, with a few carrots added, still allowing them free run of good pasture.

Food for the Young Colt.—Mare's milk contains more of water in proportion than cow's milk, and the colt which requires such definite care for the development of its bones and muscles should have any deficiency in the milk of the mother during the first six months' supplied, because a deficiency at this period of its existence may develop such peculiarities or weaknesses of constitution as can be afterwards remedied with difficulty or not at all. The breeder should know the character of the mare as a milker for her colt, and in case of deficiency supply it by the milk of the cow, which is the natural substitute, the constituent and nutritive elements being the same. In feeding this milk at the outset, it should be given just as it comes from the cow. As the colt acquires strength, skimmed milk may be advantageously used, the caseine forming good bone and muscle developing food. For a colt of two months, a quart of milk, fed at night or in the morning, will be found sufficient. A little practice will teach the young animal to take the cows' milk with as much relish as that of its own dam. A little sugar added makes it more palatable, colts being fond of sweet. A few oats may be given after the first month, commencing with about a gill, gradually increasing to a quart. This is the English custom, and is only desirable in stock of special value, as a peck of oats a day will cost about \$25 a year, and the animal at four years old will have cost \$100 more than if fed on hay and grass alone. Oatmeal or bran, with flaxseed added, boiled in the proportion of half a pint to one gallon of water, may be given with advantage to a colt nine months old. This will prevent constipation, and keep the system cool and relaxed.

Feed and Care of the Mare after Foaling.—This is of the utmost importance to the young colt. In fine weather the mare may be let out with the foal two days after foaling, and it is better to keep them in an enclosure by themselves for a couple of months. Until she can get plenty of grass, the mare should have carrots, bran mashes, and an occasional feed of oats, the latter better given in the form of tepid gruel. Rye grass is good food for mares

with early foals, but not so good as upland clover-grass. Lucerne, resembling the California alfalfa, is also good. The mare otherwise will require no special care, except that she must be well protected from the weather.

Shelter for the Colt—Shelter from the weather should be provided for colts of all classes, and this is particularly necessary during their first winter. Warmth and protection from rain encourages the growth of all domestic animals, and in none more so than in the young colt. A colt neglected in this respect during its first winter never receives its proper shape, nor will it grow into the size and strength of body and limbs which naturally belong to its breed.

Feed of Working Brood Mares—A mare's milk is easily affected by the condition of her nervous system, and she should not be subject to anything that will produce excitement. She may be given light work after the foal is three weeks old, but it should be of such a character that it can be performed without fatigue. She should have a run of rich pasture-grass, clover being better both for mare and foal; but if worked she should have in addition a ration of grain, which is improved if used in connection with linseed meal. When working the mare, the foal should not be allowed to run by her side, nor to draw milk while she is heated. She should receive invariable kind treatment.

Weaning—The colt may be weaned about the end of the sixth month; when the teeth and stomach are quite strong enough to digest the succulent grasses that are to be had from August to October. If the autumn is a dry one and grass scanty, a few steamed turnips or carrots may be given with bran, night and morning.

Food for the Growing Colt—Hiram Woodruff, in his work on "The Trotting Horse of America," says: "When the colt is weaned, give him from three pints to two quarts of grain a day, the quantity varying according to size; for if he gives indications of large frame and loose habit he will require more than a compact colt which keeps in good order, and fills out with substance as he grows up. The pasturage is still the main thing, and when it begins to fail they should have all the hay they can eat. The grain should be good sound oats. Colts should not have corn when young, and even to old horses it should be fed sparingly. Give him along with this occasionally a nice warm mash. When the colt is a yearling his allowance of oats may be increased to four quarts a day. This is the main-stay, but the other food should be good and abundant. "My principle is to give oats sparingly until the time comes to put the horse to some work, and I think it will generally result in this; that the horse will have all the size that in the order of nature he should have, and will be of a much hardier, healthier and more enduring constitution than he would have had if he had been forced along rapidly with all the highly stimulating

food he could consume. It will take longer to mature him by feeding only moderately of grain at this early period, but he is meant to last longer; and I repeat that early maturity is not favorable to long endurance. By the other method you may show me a colt that will look more like a horse at two years old than mine will at three; and at three more like a grand horse than mine will at five. But now I shall begin to overtake you. When yours is five or six he is at or past his best. Put them together at eight and I have got by far the better and more useful horse. At ten you have got no horse at all worth mentioning; while mine is now 'all horse' and in his true prime.

"If anybody thinks to follow the old starving, corn-stalk fodder, fed-in-the-snow system, under cover of what I have said on this subject, he must go to the devil his own road. My system is one of generous feeding, but not of stuffing a young colt with all the highly-stimulating food he can be got to swallow. Above all, avoid Indian corn in all shapes for young colts, and take care that they have plenty of pure water. If there is not a running stream in the pasture where they are kept, be sure they are watered at least three times a day and that they have all they want."

The intimate relation which exists between the trotting horse and the driving horse in this country will justify the application of Mr. Woodruff's method—formulated from the results of his long and extraordinarily successful experience—to driving stock.

Value of Proper Feeding of Colts—A horse that has never had any care may bring \$125 to \$175 in a good market, but if he had had all his life the care we have recommended he would have brought perhaps double the price, and the whole difference would have been gain, simply costing proper care, proper food, and in proper amounts, while his system was developing. Let the breeder look after this thing with the utmost caution, taking circumstances care in these respects of the mare, when she is bearing foal and when she is suckling it, and of the foal itself during its development, and if he has introduced into the blood of his colt the proper strain, he can look confidently for constitution, endurance and strength, and the perfection of such other qualities as the breed of his animal indicates; and he may rest assured that the return he will receive when the time for bill of sale arrives, will make him entirely satisfied with what he has done.

Youatt on Feeding of Foals—Youatt, in his work on "The Horse," says, in reference to the feeding of foals early in life, that, "There is no principle of greater importance than the liberal feeding of the foal during the whole of his growth, and at this time in particular, bruised oats and bran should form a considerable portion of his daily provender. The farmer may rest assured that money is well laid out which is expended on the liberal nourishment of the growing colt. However, while he is well fed, he should not be rendered delicate by excess of care. A racing colt is

sometimes stabled; but one that is destined to be a hunter, a hackney or an agricultural horse, should merely have a square rick from which to feed, under the leeward side of which he may shelter himself, or a shed in which he may find protection at night or from the rain."

Economy of Proper Manger-Feeding—There are no better directions of which we have any knowledge, concerning the food to be given horses, than those laid down by the same eminent author. Concerning manger-feeding, he very wisely says: There are few horses that do not habitually waste a portion of their hay; and by some, the greater part of it is pulled down and trampled under foot, in order to cull the best and sweetest locks, and which could not be done while the hay was enclosed in the rack. A good feeder will sometimes pick up much of that which was thrown down; but some of it must be soiled and rendered disgusting, and in many cases one-third of this division of their food is wasted. Some of the oats and corn are imperfectly chewed by all horses and scarcely at all by hungry and greedy ones. The appearance of the excretions will sufficiently indicate this.

Manger-Feeding—The observation of this induced the adoption of manger-feeding, or of mixing a portion of chaff with the corn or oats. By this means the animal is compelled to chew his food; he cannot to any great extent bolt the straw or hay, and while he is forced to grind that down, the oats and corn are ground with it, and thus yield great nourishment; the stomach is more slowly filled and therefore acts better on its contents, and is not so likely to be overloaded; and the increased quantity of saliva secreted in the lengthened mastication of the food softens it and prepares it more thoroughly for digestion and assimilation. The chaff to which reference is made, may be composed of equal quantities of clover or meadow hay and wheat, oat, or barley straw, cut into pieces an inch and a half in length and mingled well together. The allowance of oats or corn is afterwards added, mixed with the chaff. The grain is better bruised, and the feed a little moistened. The quantity of straw in the chaff will always counteract any supposed purgative tendency in the bruised oats.

Mixture of Food for Different Kinds of Horses—Horses of quicker draught or more active temperament, except they are naturally inclined to scour, will thrive better with cracked or bruised than with whole oats; for a greater quantity of nutriment will be extracted from the food, and it will always be found easy to apportion the quantity of straw or hay to the disposition of the bowels of the horse. The principal variation that should be made in the food of the horse of harder or more rapid work, such as the driving horse or stage horse, is to increase the quantity of hay and diminish that of straw. Many have introduced this mode of feeding into the stables of carriage and livery horses, with manifest advantage. The result has shown no loss of condition or power.

and considerable saving of provender. This system is not however adapted for race-horses; their food must be in smaller bulk in order that the action of the lungs may not be impeded by distention of the stomach.

Amount of Daily Food for Horses at Work—For the agricultural horse eight pounds of oats and two of peas or corn should be added to every twenty pounds of chaff, and thirty-six pounds of the mixture per day will be sufficient for any moderate sized horse with fair or even hard work. The draft or wagon horse may require forty pounds. Hay in the rack is supposed to be omitted altogether, but the rack should be retained as it is useful occasionally to give green feed for the health of the horse.

Advantage of the System—When the horse comes in wearied at the close of the day, Mr. Youatt says, it occupies after he has eaten his grain two or three hours to clear his rack. In the system of manger feeding, the chaff being already cut into small pieces and the oats or corn bruised, he is able to fully satisfy his appetite in an hour and a half. Two additional hours are therefore gained for rest. This is a circumstance deserving of much consideration, even in the farmer's stable, and of still greater importance to the livery proprietor, or to the owner of every hard worked horse.

Most Profitable Kinds of Feed—Horses fed on hay and grass alone will maintain themselves in good condition, and even do ordinary work, but whatever the quantity or however good the quality, this is not sufficient to keep a horse without deterioration under hard work, and therefore other substances with a larger proportion of nutriment in smaller space are added. The oat is the most advantageous because it is best adapted to the constitution of the horse, and contains .74.3 per cent. of nutritive matter. It should be old, sweet and dry. New oats are heavier, but the extra weight is principally water, and they are harder to masticate, and forming a more glutinous mass, more difficult to digest. When fed in considerable quantities they are apt to cause colic, and even staggers. The old oats, when chewed, form a smooth and uniform mass, which more readily dissolves in the stomach, and is more rapidly and effectively assimilated. Oats should be plump, bright and free from smell or taste. The musty smell of damp or wetted oats is caused by a fungus growing upon the seed, which has an injurious effect upon the urinary organs and often on the intestines, producing colic or inflammation of the kidneys or bowels.

Feed Adapted to Fast Horses—The manner of feeding foals and colts has already been treated. It may not be out of place to reiterate that a closely-drawn or too economical policy will not answer in connection with the feeding of fast driving animals, or those designed for that purpose. The breeder who attempts to proceed in this way will defeat his own ends. Plenty of food must be given from the outset, as the future character, condition and

capacity of the colt will depend largely, if not altogether, on the treatment he receives in his early life in this respect. The constitution of fast horses requires more particular care, because the severe kind of exertion required from them demands perfection of bone, muscle and respiratory and arterial organs, and also because of the greater value they represent. Change and variety of food are desirable and as many kinds of wholesome food as are at hand should be used, making the alternations, however, with regularity, or at stated brief intervals.

Variety in Feeding—Barley is a good substitute for oats, but should be cracked or bruised; mixed with hay it makes good feed for young horses. The entire feed should be dampened. Millet-meal is a first-rate substance to be given to young and growing horses, but should not be fed without grinding. It will afford as good a ration as can be given, because it is particularly muscle-forming. Meal made from peas is in this country what beans are in Great Britain. It is as strong a food as can be given horses. By themselves peas are constipating, but this may be obviated by mixing in the proportion of four bushels of peas with four of corn and one half bushel of flaxseed, ground together.

General Summary—American farmers by proper attention to feeding can produce as valuable animals for all purposes as there are in the world. The difficulty has been that stock-growers in this country have not paid as much attention to the details of feeding, as they do in the old. It should be borne in mind that no matter what the value of the animal may be, or what his class, he will not realize just what he should, unless his feeding has been properly managed. Feeding lays the basis for everything in the horse. Feeding may make a poor horse a good one, but no naturally good horse will be other than poor if he is not properly fed. This point might be laid down as an axiom and it should be observed. It is perfectly easy, by giving attention to details, to feed to the very best advantage, and at the same time with the utmost economy; and the returns which the stock-grower or owner will receive, both in labor and value, will amply compensate for the care and trouble. The difference which exists between animals as concerns their perfection and their market value will depend far more upon feeding than upon strains of blood; and the wise stock-owner, who attends intelligently to this, will obtain a higher price from an inferior animal, than he who is careless or indifferent can procure for a creature of the most delicate pedigree.

FEEDING OF CATTLE.

Feeding Young Calves—As with other animals, the natural and best food for young calves is the mother's milk. However, after a period of from thirty to sixty days, the calf may be fed with advantage upon skim-milk and linseed or flax-seed gruel. It

should be taught to drink early, when from six to ten days old. It will learn easier at this early season, and the cow will give more milk through the season than if the calf were permitted to suck longer. All feed should be given as nearly as possible of the temperature of the mother's milk. The blooded calf should have the free run of a dry yard, with a little hay or grass to eat, that it may early develop its first stomach and chew its cud. A small field of grass in summer is better. When the time comes for feeding skim-milk, the ration may be made about as nutritious as the new milk by the addition of flax-seed gruel, which Stewart, in "Feeding Animals," recommends to be made of a pint of flax-seed and a pint of oilmeal, boiled in ten or twelve quarts of water, or flax-seed alone in six times its bulk of water. Mix this with one to two parts of skim-milk and feed blood-warm. Feed twice a day at regular times till the calf is six months old. During this time the calf should be taught to eat a few oats, and in any tendency to scour, mix occasionally a quart of coarse wheat flour with the food. Flax-seed and pea-meal may also be used advantageously with the skim-milk.

Ration for the Calf—The calf may be fed pure milk for a single week after weaning. Then use skim-milk prepared as above described, or, if flax-seed is not obtainable, use as a substitute two tablespoonfuls of oil-meal, dissolved in hot water. In a week this may be doubled, gradually increasing to a pound a day, which will be sufficient up to sixty days old. Stewart says twenty pounds of skim-milk per day for the first ninety days is sufficient, but the amount may be increased as the calf grows older. The linseed-oil meal is valuable, not only because it is cheap ($1\frac{1}{2}$ to 2 cents per lb.), but because it has ten per cent. of oil and a large percentage of muscle-forming food, and phosphate of lime to build up the bones and extend the frame.

Feed Without Milk—In absence of milk, whey may be used; but in this case the oil taken away in the cream, and the nitrogenous food, lime, etc., removed in the caseine taken out for the cheese, have to be supplied. This is best done by adding a quarter of a pound of oil-meal or cake dissolved in hot whey to each gallon, and when the calf is three or four weeks old, add to this one-fourth pound of wheat bran, or ground oats, for each gallon of whey. This extra food is estimated to cost in six months \$4 to \$5, giving the calf four gallons a day. A calf so fed should average 400 to 450 lbs. at that age, and should be worth about \$20; while, if fed on whey alone, they will not be worth enough to pay for the labor of feeding.

Another old and very good expedient to compensate for the absence of milk is to feed hay tea, made of good quality of hay cut early, and thoroughly boiled down. Two gallons of hay tea in which have been boiled fourteen pounds each of flax-seed and wheat middlings will furnish five rations for a calf. Three pounds of hay, cut in pieces one inch long for each calf, should be boiled half an hour. The hay is then raised and let drain into the kettle, when the liquid

is boiled to a jelly with the flax-seed and middlings. With western stock-raisers, this means will rarely need to be resorted to, but it has been found advantageous in dairy-farming districts where milk is so valuable for butter and cheese.

Profitable Mode of Feeding Veal Calves and Young Cattle—If the calf is being fed for veal, it should have all the milk it will drink direct from the cow until four or six weeks old. If they will take it, a little corn-meal may be added. No veal which has not been reared upon the mother's milk, or upon whole milk directly from another cow, is really fit to eat. The veal calf should have plenty of fresh air, and be constantly kept on good, clean bedding; otherwise the veal may taste of the stables. The space in which the veal calf is kept must be small.

Profit and Value of Young Beef—In taking up the subject of fattening cattle for beef, we desire to lay particular stress upon the profit and advantage of young beef. The old idea that beef should not be slaughtered under four years belongs to a time before the present system of scientific care and early maturity had become the rule, and has been exploded by experience. It is now the accepted rule that the time for slaughter, or for marketing, is whenever the beef animal is matured. It is evident, then, that the earlier maturity is reached, the less will be the expense, the more immediate the return, and the greater the profit. Early maturity is attained by first securing the finest quality of blood, and next by proper and scientific feeding. The value of beef brought to market from eleven to twenty months old is thus illustrated in a paper in the *Royal Agricultural Journal*:

The age, rate, price and return per month for feeding is given as follows:

	Price.	Return per month from birth.
One eleven months old steer.....	\$ 74.50	\$6.73
“ thirteen “ “ “	101.64	7.82
Three fourteen “ “ heifers (average).....	92.40	6.60
“ fifteen “ “ “	101.64	6.67
One sixteen “ “ steer.....	127.00	7.94
Five “ “ steers (average).....	102.30	6.39
One eighteen “ “ steer	115.50	6.42
“ “ and one-half months steer.....	129.50	7.00
Two “ “ “ steers....	122.10	6.60

We might add *ad infinitum* evidence of similar nature showing that beef slaughtered about nineteen or twenty months of age gives, as the butchers say, complete pieces of beef, and the meat very tender and of delicious flavor, consequently commanding the highest price. Taking in view, then, the desirability of sending beef early to market, and looking to the best proportions of a balance on the

right side of his profit and loss account, the breeder will be led to consider more carefully and better to realize the importance of the great care which should be exercised in the feeding of young calves.

The following figures, furnished by the managers of the Chicago Fat Stock Exhibition, will give a practical illustration of the profit of early feeding and marketing. This table shows the cost to breeders and sale price of nine twelve-months-old animals:

Name of Animal.	Age.	Weight.	Cost to Breeder.	Price Realized.
Jay.....	12 mos.	800 lbs.	\$31.30	\$48.00
Experiment.....	"	710 "	33.50	42.60
Young Aberdeen.....	"	1000 "	31.67	60.00
King of the West.....	"	1000 "	34.67	60.00
Cassius IV.....	"	1000 "	31.47	60.00
Cassius V.....	"	1090 "	38.15	65.40
Hattie.....	"	700 "	19.75	42.00
Jim Blaine.....	"	950 "	27.50	57.00
Canadian Champion.....	"	1000 "	33.67	60.00

Feeding Older Cattle—When cattle are not prepared for the market at an early age, as above described, it should be borne in mind that they ought not to be kept longer than their fourth year. They will attain their proper ripeness at between three and four years. In regard to their feeding, it should be remembered that the cattle should *always* be fed well; that is, with a view to continuous growth. They should have plenty of pasture during the pasture season; sufficient hay or good forage in winter, with a good bed to lie on; ample shelter and warmth; salt at intervals not longer than ten days should be supplied throughout the year till they are two or three years old. When three years old, you will take steps to fatten them for the market.

Most Profitable Method of Fattening—The object will now be—the animal having had proper care as a calf and its growth and condition having been maintained without having been suffered to retrograde at any time—to fatten it for the market in the least time and at the least expense. It has been definitely established that the cheapest way to fatten cattle is by grass feeding. The fattening process should therefore be commenced in the summer of the third year. It should be premised that one of the most essential points in fattening is perfect tranquility. Excitement of any kind will arrest the process of fattening or lead to a diminution of the yield of the milking cow. Animals which are bred near the dwellings of men and which are accustomed to kind treatment when they come into contact with human beings, are those which fatten most readily and produce the greatest returns in the market.

The Best Pasturage—In this country the feeding of cattle largely upon grass is a necessity as well as an advantage, and pasture therefore forms an important subject for consideration. The greater the variety of nutritious grasses in pastures for fattening stock, the better. Good hay-grass and clover can be judiciously

combined, but grass which is suitable for hay is not always the most desirable for constant cropping by cattle. Clover is desirable. Blue grass has no superior for pasturage. Its growth is very extensive; it is available early and remains fresh till the snow falls. The wire-grass of the Middle and Northern States is wholesome, furnishes a large amount of nutrient food and is first-rate grass for pasture. Orchard grass, in good form, is excellent food. Where land too rough or hilly for cultivation is devoted to pasturage, it should be seeded with a variety of grasses, and the same is necessary when "seeding down" for the recuperation of land. It will be well for pasturage purposes to combine timothy, clover, red-top, wire grass and orchard grass in feeding. No pasture is complete without an ample supply of pure water, whether a running stream, which is best, or supplied by artificial means.

Profitable Addition to Pasture Feed—Some of the best breeders in the United States (who feed to the best advantage and whose products command the best prices) make it a rule to supply cattle which are feeding (no matter how good the pastures into which they can turn them) with a certain quantity of grain. This practice is to be commended and all breeders will find themselves benefited by it. In England, cattle fed on grass are also given corn-meal or linseed cake in addition. It must be understood that this recommendation does not conflict with the superiority of grass as a fattening food; but it is necessary to supply deficiencies which sometimes occur in the grass, and an addition of grain promotes health and will add materially to the weight.

Proper Shelter and Housing—The breeder is to bear in mind that a great proportion of food consumed goes to supply the necessary animal heat, and the amount and quality must therefore be dependent, to a large extent, upon the temperature in which the animal exists. Even in summer, animals must have a shelter to which they can resort for protection from storms, cold rains and unfavorable weather. In winter, however, warm shelter is a part of the economy of feeding, for if there is insufficient shelter a large proportion of the feed which otherwise would go to make flesh and increase fat, is consumed by the demand of the body for heat. Any expense which this entails is amply repaid in the earlier period at which an animal will mature, and in his increased weight and value. Thus a fattening animal which has been winter-fed and sheltered will realize more slaughtered at twenty-four months than the same animal left exposed in the winter and killed at three years. In this connection, it should be borne in mind that light and ventilation are indispensable accompaniments to warmth.

Most Profitable Feed for Winter Fattening—Clover and corn, to which may be added cornstalks, are good fattening food. Peas and oats may be used to advantage. Cornstalks with the ear corn are good feed and large herds of cattle in the West are fattened upon these alone. Corn is an excellent fat-

tening food, but its character is such that it needs to be administered with something to deprive it of the tendency to a feverish condition of the blood. Oil cake is very available for this purpose. Fodder and grain should be fed at the same time, as they are more certain to be thoroughly masticated and digested. Fodder should be cut, with this object, and corn may be cut stalks and ears together. It is thus economized in feeding, does not put so severe labor on the digestive organs, gives greater time for rest and tends better to lay on fat. Corn cut early in the season, while the stalks are somewhat green, is better than that cut late.

Why Fodder Should be Cut—The object of masticating food is to comminute it, so as to present the greatest surface for a given quantity to the action of the gastric juice and the fluids by which it is assimilated in the stomach. The stomach of the cattle used to the succulent food of pasture is accustomed to receive its sustenance in a pulpy mass. The dry, woody fibre of winter fodder must therefore be slower of digestion, for it has to be reduced to the same condition. The cutting of food, the more finely the better, therefore acts as a part of the work of digestion, facilitating the process to the manifest advantage of the animal, and this aid will be still more and greatly increased if the food is steamed or cooked.

Mixing Different Qualities of Feed—Cutting gives another advantage in enabling poorer qualities of feed to be mixed with the finer, and thus a palatable and nutritious food is formed, consuming qualities of fodder which otherwise would be rejected and go to waste. Experiments have shown that a bushel of cut straw mixed with two quarts of middlings, is equal to the same quantity of cut hay and worth twenty-five per cent more than uncut hay. In this way the breeder can save his hay for a more profitable market and use up his straw and corn-stalks, attaining with equal efficiency the object of fattening the animal, and also transforming what would be otherwise refuse into the most valuable compost for his soil, which is an important point of agricultural economy and should be credited against the cost of fattening the stock.

Profit of Cutting and Cooking Feed—As we have shown, by cutting, all the coarse fodder on the farm can be consumed in fattening animals and thus turned into money. Where steaming is practiced this profit may be largely increased. Besides, it enables the feeder to prepare special food for special results. The intelligent feeder may increase the frame and muscle particularly, or he may increase the fat exclusively, or all together. Stewart says: "If he wishes to increase the frame and muscle specially he will give food rich in phosphate of lime and gluten, without having much oil or a large proportion of starch; and for this purpose pea or bean meal, mixed with his coarse fodder, will produce the desired result. If he wishes to lay on fat principally he will use corn meal or oil meal. If to produce growth of the animal, frame and muscle, as

well as fat, let him mix the different kinds of foods together. An experiment will illustrate the profit of cutting: When keeping a small stock which would consume thirty tons of hay in the winter, seven tons of hay were sold, and seven tons of middlings bought and used upon cut straw (two quarts to the bushel), and the stock wintered in fine condition. The straw was thus turned into or rendered equivalent to twenty-three tons of hay, worth that year \$18 per ton (generally it is worth \$10 to \$12) in barn, or \$405. Hay, in most localities, is worth as much per ton as middlings, and half to three-fourths as much as corn meal. Therefore, it will be seen the proceeds of one-fourth the quantity of hay requisite to winter a stock of animals will purchase the middlings or meal necessary to use upon the straw, and the other three-quarters of the hay, or its value, will be a clear gain to the farmer, not assuming anything for the value of the straw.

Other Essentials to Profitable Feeding—In fattening cattle care is not only required in regard to feeding in the foregoing respects, but strict attention must be paid to the items of (1) cleanliness, (2) regularity, (3) temperature, (4) exercise, (5) fresh water and (6) pure air.

1. **CLEANLINESS IS OF THE UTMOST IMPORTANCE**—It is impossible for the animals to do their best unless they are kept free from dirt and their skins in a fresh and healthy condition. Comfort is one of the best means to promote condition in the fattening animal. They should be carded daily, and whenever labor can be commanded, thoroughly brushed from head to foot.

2. **REGULARITY IN FEEDING AND WATERING IS INDISPENSABLE**—Animals always thrive best where strict regularity in the hours of feeding is observed, so that they come with a full appetite to each meal and the digestive functions work with harmony and free from disturbing influence.

3. **TEMPERATURE**—As before explained, the more protection the animal is afforded against the rapid circulation of cold air, the more is reduced the waste of the heat-producing elements which it is the object to convert into fat. While, therefore, fresh air should be regularly supplied, all unnecessary loss of heat should be avoided.

4. **EXERCISE**—This is a matter somewhat difficult to determine. Some prominent breeders tie up their cattle in the beginning of winter and never untie them till the spring pastures are ready to turn them into. But it would seem more natural and is probably more beneficial that they should be turned out for a few hours every day in fine weather.

5. **FRESH WATER**—Water should not be cold enough to produce a chill. It should be free from organic impurities and from barn-yard drainage, and it is better if it can be arranged so as to be always within reach of the animal.

6. **PURE AIR.** This must always be supplied in abundance, and is as essential in importance as nutritious food. But it must be regulated so as to be free from draughts or strong currents blowing directly upon the animals in very cold weather.

Profitable Mode of Feeding Cows for Milking Purposes—In feeding dairy cows the main object is, of course, to promote the yield of milk. Perfect health is the first essential, and this is to be maintained only by a generous system of feeding. Milch cows should have no more exercise than will keep them in health, and avoid the accumulation of fat beyond what is meant by good condition, and their feed should stimulate to the utmost the secretion of milk. This is best accomplished by the use of rich and well-cured hay, to which are added roots and bran. With respect to the exact routine to be observed, the individual will have to be largely governed by circumstances, but the following practice from Mr. Flint's well-known and justly celebrated work, may be taken as a good rule for the general guidance in the stall-feeding of dairy animals. Mr. Flint says: "I have found in my own practice and in that of the most successful dairymen, that in order to encourage the largest secretion of milk in stalled cows, one of the best courses is to feed, in the morning, either at the time of milking, or I prefer immediately afterwards, with cut-feed, consisting of hay, oats, millet, or cornstalks, mixed with shorts and Indian, linseed or cottonseed meal, thoroughly moistened with water. If in winter, hot or warm water is better than cold. If given at milking time, the cows will generally give down the milk more readily. The stalls and mangers ought always to be well cleaned out first. Roots and long hay may be given during the day; and at the evening milking, or immediately after, another generous meal of cut feed well moistened and mixed as in the morning. No very concentrated food, like grains alone or oil cakes, should, it seems to me, be fed early in the morning or on an empty stomach, though it is sanctioned by the practice of the London milk dairies. The processes of digestion go on best when the stomach is sufficiently distended; and for this purpose the bulk of the food is almost as important as the nutritive qualities. The flavor of some roots, as cabbage or turnips, is more apt to be imparted to the milk when fed on an empty stomach than otherwise. After the cows have been milked and have finished their cut feed, they are carded or curried down in well-managed dairies, and then either watered in the stall, (which in very cold or stormy weather is preferable), or turned out to water in the yard. When they are let out, if at all, the stables are put in order, and after tying them up, they are fed with long hay and left to themselves till the time of next feeding. This may consist of roots such as cabbages, beets, carrots or turnips sliced, or of potatoes, a peck, or if the cows are very large, a half-bushel each, and cut. Feed again at the evening, as in the morning, after which water in the stall, if possible. The less cows are exposed to the cold of winter the better. They eat

less, thrive better and give more milk when kept housed all the time than when exposed to the cold."

How to Feed to Increase the Quality of Milk—There has been an idea which has been dispelled by experiment and experience, that full feeding caused cows to deteriorate, the reverse being proved to be the case. A distinguished French scientist determined by observation that a cow which consumed twenty-two pounds of hay, above the ration required for actual support, yields twenty-two pounds six ounces of milk. A report by a dairyman to the New York State Agricultural Society, states that by careful feeding, closely followed up during a period of five years, the productiveness of his cows was so greatly improved that whereas in the first year of the five it required a fraction more than thirty-nine pounds of milk to make a pound of butter, in the last year only twenty-one pounds were required. And this result was reached by a system of winter feeding which included a proportion of corn, buckwheat and oats ground together, until the spring grass was available; then during the summer and till about the first of September, grass alone; and during the autumn adding to the grass fodder, corn and pumpkins." This shows that not only is generous feeding good to promote the yield of milk, but that systematic and continuous good feeding will improve the quality as well as the quantity of milk produced, and thus materially enhance its value.

Best Course of Feeding to Produce Milk—It may be advantageous to give one or two formulæ of rations which are adapted to ensure a large yield of milk, and at the same time keep up the condition of the cow. In this connection we may call attention to the importance of ensilage as cattle food—that is straw, grass or cornstalks cut and cured while somewhat green and retaining the sugar and juices of the plant. From the following may be selected a course of feed adapted to any locality or the resources of any dairyman:

MATERIAL.		COST.
1. Meadow hay,	16 lbs.....	6.4 cents.
Wheat bran,	8 "	6.0 "
Pressed meal,	2 "	3.0 "
Corn meal,	6 "	5.0 "
		<hr/>
		20.4 cents.
2. Corn fodder,	18 lbs.....	4.5 cents.
Wheat bran,	8 "	6.0 "
Cotton-seed meal,	4 "	4.5 "
Corn meal,	4 "	3.0 "
		<hr/>
		18.5 cents.

MATERIAL.			COST.
3.	Corn ensilage,	60 lbs.....	7½ cents.
	Hay,	5 “	2½ “
	Linseed meal,	2 “	2½ “
	Bran,	4 “	3 “
			<hr/> 15½ cents.
4.	Clover ensilage,	60 lbs.....	9 cents.
	Corn meal,	4 “	4 “
			<hr/> 13 cents.
5.	Corn ensilage,	40 lbs.....	5 cents.
	Clover ensilage,	40 “	6 “
	Bran,	4 “	3 “
			<hr/> 14 cents.

“Any of these rations,” says Stewart, in his admirable work on “Feeding Animals,” would produce a large flow of milk and fully keep up the condition of the cow, if her live weight were not over 1,000 pounds.” In most parts of the west any of these rations would not cost at the outside over ten to fourteen cents per day. The ensilage rations are the cheapest and would produce the largest flow of milk; they will also produce a good quality of butter in the winter.

FEEDING OF SHEEP.

The great and growing importance of sheep-raising as a branch of agricultural industry is now generally recognized, and practical information which may enable him to manage this department of stock production with more profitable results and with greater economy, will be welcomed by every intelligent farmer. As with every other domestic animal the value will depend largely upon the care and treatment the animal receives. Whether it be raised for wool or for mutton, principally, the degree of profit will be governed by the system of feeding, and this must be judiciously managed and carried out with definite purpose. Years ago sheep were raised almost entirely for their wool alone, but at this day the enormous market for consumption gives the subject of breeding for mutton equal importance with that of raising for the wool product. In this connection it may be said that while many good mutton-sheep are indifferent wool-producers, it is not practicable to raise sheep for wool only, because in this event fully one half the animal would become literally waste. Besides, when feeding is rightly carried on for the production of wool, it cannot but result in developing good mutton; for the very same method which will improve the con-

dition of the sheep in the one direction must necessarily improve it in the other also.

Feeding for the Double Purpose—Hence the accepted principle is to feed for good mutton at the same time as for the production of good wool, and there has not been nor will there be any ill effect from making this attempt, but on the contrary an increase of profit. Neither the quantity nor quality of the wool will be diminished by aiming at securing good mutton as well; but experience has shown and will continue to prove that the more carefully sheep are fed and reared for mutton, so much better will be the result in the amount and quality of the wool produced.

Double Income from Sheep—It should be borne in mind that sheep yield an income of two sorts during the year, viz: their wool and their lambs, and it is a fact to be kept in view, that these sheep which are the most fertile and bring to their owners the largest quantity of lambs, are also the best producers of both mutton and wool. The sheep will also, when compared with most other animals, yield a larger return upon the percentage of feed. Of any food consumed it is estimated that the sheep will store up in increased weight twelve per cent., against eight per cent. by cattle.

Value of Sheep on Impoverished Land—The Spanish have a proverb, "The sheep's foot is golden," meaning that it brings improvement and not deterioration to the land. Sheep can be raised to advantage upon lands which have become too much impoverished for cropping purposes, and it is of importance for the feeder to understand that the value of sheep for the purpose of fertilizing the soil is the utmost. The following tables, the results of careful experiments, will illustrate this, and it should be kept in view that the value of feeding is to be estimated not alone by the return in flesh or wool, but also by the value of the offal which the animals cast away. The experiments alluded to show:

NITROGEN STORED UP AND VOIDED FOR 100 LBS. OF FOOD CONSUMED.

Animals.	Stored up as increase.	Voided as solid excrement.	Voided as liquid excrement.	Total excrement voided.
Sheep.....	4.3	16.7	79.0	95.7
Oxen	3.9	22.6	73.5	96.1
Hogs.....	14.7	21.0	64.3	85.3

ASH CONSTITUENTS STORED UP AND VOIDED FOR 100 LBS. OF FOOD CONSUMED.

Animals.	Stored up as increase.	Voided as excrement.
Sheep.....	3.8	96.2
Oxen	2.3	97.7
Hogs.....	4.5	95.5

Thus it will be seen that the sheep give back to the land sub-

stantially 96 per cent. both of the nitrogen and the ash constituents of their food, showing an infinitesimal waste of the fertilizing material in the food given them. Moreover, farmers know the great value of the urine of animals for fertilizing purposes, passing immediately into the soil and yielding its fertilizing elements, without the decomposition necessary in solid compost, and in this liquid an exceedingly large proportion of the feed of sheep passes off. There is no domestic animal so valuable as the sheep in equalizing the distribution of the fertilizing ingredients of its offal over the land upon which it feeds or where its offal may be expended.

Economy of Good Feeding—As with all other animals the principal object of the intelligent feeder is early maturity, and it must be kept principally in view that to secure this there must be systematic care and feeding throughout, and this must be maintained through several generations before the best results are realized, whether grade or blooded sheep.

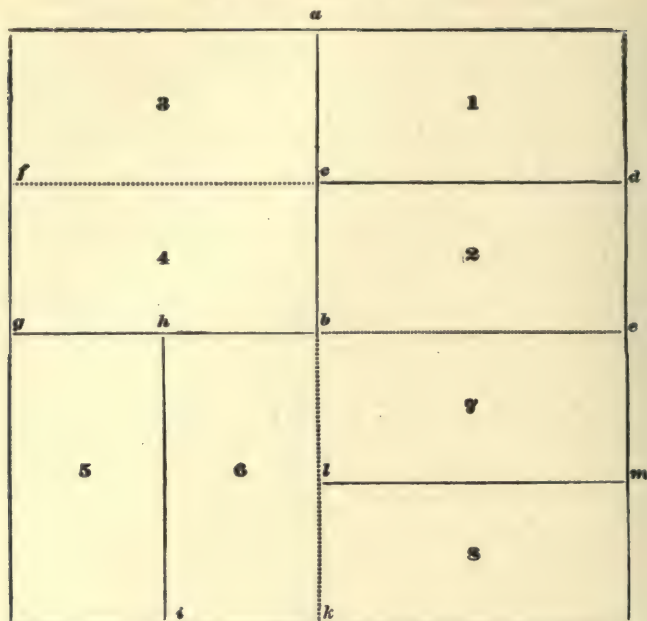
Feeding Ewes—It is just as important that the ewe should receive special attention while suckling her young, as in the case of mares with foal or cows with calf. If the feeding is insufficient, so that the ewe will not give a proper supply of milk to her young, the growth of the lamb will be slow, and the results which are looked for from early maturity will never be attained. If the ewe is a reasonably good yielder of milk, and the herder is careful to add something to her feed so as to increase her milk yield, he will find that the lambs will mature early; and extra food to the amount of 33 per cent., or thereabouts, will add at least one hundred per cent. to the weight of the lamb at the end of three months, as compared with what it would weigh if the dam were scantily fed.

Importance of Early Maturity—Good feeding will prove an encouragement to the herder in more respects than one; it will give early maturity to the stock and in addition to this will increase the weight, and thus the herder will realize profit from both these directions. Early maturity involves profit because it fits the animal for the market at a less expense than when longer kept. By it we mean the steady, constant and utmost development of perfection in the young animal, and when this is sought to be attained, it will be found that the meat has acquired a good flavor and will be tender and juicy; in a word, it will produce the best value and consequently command the highest price. It cannot be too strongly impressed upon the producer that his most profitable object is always to produce the meat in its best condition at the very earliest period of the animal's life. This the reader will have seen fully illustrated in the department upon the feeding of beef animals, and the table of experiments there given, showing the importance and advantage of sending young beeves to market, will fully apply to sheep also.

Best Season to Feed Sheep for Market—Sheep should be fed for market while the weather is warm, during the summer months, or during the early autumn. If the stock is to be

kept until winter it should be fully fed during the fall, so that it may be in good condition for the butcher when the winter sets in. The herder finds that he will not incur any very great expense in carrying his sheep through the winter in prime condition for mutton if they are in good condition in the fall. If he can afford to give them grain, which he can do to his own advantage, feeding it upon the ground upon which roots or other crops have been gathered, the sheep will not only increase sufficiently by eating this after-food in connection with the added grain, but they will benefit the soil greatly by the enrichment which will necessarily attend their being confined within certain limits during a definite period of time. A limited quantity of grain with this after-feed or with the roots, will forward the condition of the sheep better than a decidedly more expensive feed will do if allowed to the sheep after the weather has become cold. The herder will also find it to his advantage and very inexpensive to include in the feed a small quantity of oil cake or cake of husked cotton-seed. If the oil cake be made of linseed, it will be as profitable as any which can be provided. This addition has a fattening tendency and also possesses that nitrogenous element which, as already shown, is so valuable a creator of liquid excrement. The sheep will be advanced more rapidly towards maturity by its use, and the offal they cast off will be of greater value to the land than if fed upon the roots or grain without the addition of these nutritious elements.

Feeding by Use of Hurdles—Hurdle-feeding is found an economical and advantageous method of grazing sheep. In this way the sheep are given a fresh feeding place every day and are not allowed to nip the feed too closely; the grass has more favorable opportunity for growth and the fertilization of the ground fed over is more complete and systematic. Hurdles may be made cheaply of light stakes pointed at one end and fastened together with bars, the stakes five feet high, and each panel nine feet long. A hole is made in the ground for each stake by a pointed iron bar, and it is fastened by driving down with a mallet, the panels being secured together with wire. As the crop is eaten the hurdles are moved until the whole field has been covered. Economy of labor may be exercised by laying out the plots in a certain manner. As for instance, take a square ten acre field. It will be 220 yards across and this is the least length of hurdles that can be used. If the field be divided into eight strips across, the whole hurdles must be moved at once and there will be seven removals of the whole hurdles. In the plan given below, this field may be divided into eight sections by moving only half the hurdles seven times.



For instance, plot 1 is fed by placing the hurdles from *a* to *b* and from *c* to *d*. Plot 2 is fed by moving the hurdle line *c d* to *b e*. The next setting of the hurdles is from *c* to *f*; the next from *b* to *g*; the next from *h* to *i*; the next from *b* to *k* and the next and last from *l* to *m*.

Growing Peas as Valuable Food for Sheep—For summer feeding peas will furnish as good a crop as any which can be provided. If cropped by the animals when the peas are six inches high they will immediately renew their growth and the second crop will be fuller than the first. It is not desirable, however, that the sheep should eat the pea crop too closely to the ground, and they should be moved frequently, by means of the hurdles, so that this may be avoided. Under good circumstances and careful management by the herder, a crop of peas may well furnish feed for a flock of sheep at least three times during a season. This vegetable matter contains a large nutritive power and its quality is most desirable. It stands in the same category as clover and both rank as the best feed, particularly of animals which are not matured, and whose early maturity is desired, because they are especially abundant in the elements which supply the bones, the muscles and the nervous system which gives the vigor. There is another advantage in feeding growing peas to sheep, and that is, because the vegetable will grow upon almost any variety of soil, whether heavy or light. It is not necessary that the ground be particularly fertile, and any dry soil of a clay character will produce a fine crop.

Other Valuable Feed for Sheep—Winter rye will supply good feed that can be utilized during the entire season, and then be in condition for pasturage or to yield another crop the succeeding year. Both this and peas are safe feed. Some herders find it to their advantage to sow oats with the peas, and the crop thus sown will be available to the flock as early as if the peas had been sown alone, and the change is found to be a desirable one. Oats are also a good feed when sown alone. Like peas, if eaten off when they are six inches high, they will immediately grow again, but not, of course, if they are allowed to mature. Millet can be grown in all parts of the United States and is valuable both for fodder and seed. It matures best upon warm and dry land and requires careful cultivation. It grows rapidly and covers the ground well. It is a favorite feed with sheep and where the farmer has plenty of land it may be sown in small pieces at different times so that one section will follow another for feeding. The most common variety of millet is known as Hungarian grass. It reaches a large, full growth, and proves a profitable pasturage.

Best Time for Root Feeding—Root feeding is now commonly understood to be profitable, and American breeders of sheep are turning their attention to its advantages, which have been long recognized in England. The best authorities indicate that the most desirable time of the year in which to make roots the most profitable feed is during the later fall months before the weather becomes too severe, and allowing the sheep to feed them off the ground. This is best regulated by the use of hurdles, as before described in referring to economy of pasture feed. Beets and turnips may be matured so as to be in condition to be fed in the month of October, and sheep can be fed upon them with late clover, and the very best quality of nourishing succulent food can thus be provided for the opening of winter. Rape, which can be produced at about the same expense as wheat, has been found to grow successfully on the Western Prairies, and sheep herders would find it to their advantage and profit to make this an important crop. It is considered to have an advantage over carrots, turnips or beets, on account of its richness, and it recovers without difficulty after having been fed off, and its second growth of stalks and leaves answers the purpose of a second course of feeding.

Profitable Pasturage for Sheep—It must be kept in view that the soil of the sheep pasture must be dry. The adage that "the sheep must have a dry foot," cannot be gainsaid. The grasses which are referred to under the head of cattle feeding are also good for sheep pasture. Parsley is eaten voraciously by sheep, as are also wormwood and yarrow, and these may advantageously be introduced into the pasturage, as they are supposed by shepherds to act as specifics for or preventives against foot-rot and red-water. Buffalo grass is also a favorite and profitable food for sheep. It gives mutton a fine flavor and makes it tender. Prairie mesquito-grass,

which grows from Texas to Indian Territory and ranges northward into Illinois, is a valuable feeder, as is bunch-grass, blue-mail or blue-point. Sage grass is considered a desirable food; also the "Beverage grass" of the Western States and the Alfalfa of California.

How to Regulate Pasture Feeding—Care must be taken not to overstock pastures, as when the grass is too close to the ground the sheep take too much earth into their stomachs, and the tendency is to wear down the teeth and reduce the feeding quality of the sheep. Neither is it wise to have too few sheep in a pasture, as the pasture should be kept short and thick. This can be well regulated by means of hurdle-feeding.

Selection of Breeding Ewes—While the lambs are growing up to breeding age, those of prime form and good feeders should be picked out for breeding. *No profit comes from a slow feeder.* These should be culled out for fattening for young mutton.

Shelter for Sheep—If sheep are to be maintained in good condition during the winter, they must have efficient shelter, and the same is necessary for protection from the cold rains and storms of summer. Sheds should have a southerly opening, and a portion of them should be thoroughly enclosed, where shearing, marking, sorting and doctoring may be carried on, and especially for lambing-places and the confinement of newly-sheared sheep.

Proper Method of Winter Feeding Sheep—Sheep should not run or be fed in yards with other stock. Cattle often hook and kill them, and colts tease and injure them. They should be fed all they will eat, but should not have provender to waste. Dry fodder is necessary to be fed throughout the North. Many flocks are fed on hay (timothy and clover), and do well, but it is well to have the food varied. Some shepherds add fodder of corn-stalks and straw, and others supply a daily feed of grain throughout the winter. If hay is the principal feed, the herder will find it desirable to give cornstalks once a day, or at least every fourth or fifth feed. If other feed than hay is the chief nourishment provided, corn blades or pea-stalks will be found good. Provided a proper supply of palatable nutriment within a proper compass is given, the particular kind of feed may be suited to the convenience of the feeder. Hay, corn-blades and properly-cured pea-stalks are palatable, and each supply the proper nutriment in the quantity which the sheep can readily take into its stomach, and consequently from either of these, the sheep can derive its entire subsistence. These remarks also apply to greenish cut oats and barley straw. The flock-master must be somewhat guided by his observation of what best agrees with his flock, as conditions of locality, etc., will have an influence.

Kinds of Feed that Produce Most Wool—We have mentioned the necessity of good feed in order to insure desirable production of wool. There is a striking analogy between the

amount of nitrogen in the food and the amount of wool. To illustrate this we append a table showing the result of experiments in feeding as follows:

KINDS OF FOOD.	Increase of weight in live animal.	Produced wool.		Produced tallow.		Nitrogen per cent. in food.
		lbs.	oz.	lbs.	oz.	
1000 lbs of raw potatoes, with salt.....	46½	6	8½	12	5½	0.36
1000 " " " without salt.....	44	6	8	10	14½	0.36
1000 " raw mangel-wurzel.....	38	5	3½	6	5½	0.21
1000 " pease.....	134	14	11	41	6	3.83
1000 " wheat.....	155	13	13½	59	9	2.09
1000 " rye, with salt.....	90	13	14½	35	11½	2.00
1000 " rye, without salt.....	83	12	10½	33	8½	2.00
1000 " oats.....	146	9	12	40	8	1.70
1000 " barley.....	136	11	6½	60	1	1.90
1000 " buckwheat.....	120	10	4½	33	8	2.10
1000 " good hay.....	58	7	10½	12	14	1.15

From this table, and guided by the results shown, the feeder can select approximately the most advantageous kinds of feed to use.

Winter Feed of Breeding Ewes—Up to two or three weeks preceding lambing, it is only necessary that breeding ewes be kept in plump ordinary condition, nor are any separate arrangements necessary for them after that period, in climates where they can obtain sufficient succulent food to provide for a proper secretion of their milk. In the North, where the grass does not start before lambing time, roots should be mixed by the flock-masters with oat or pea-meal, and given in addition to ordinary food.

Appropriate Time of Giving Various Kinds of Feed

—If there is any rule more absolutely imperative than another in the management of sheep it is that the strictest regularity should be observed as to feeding, both as to time and in the alternations of different kinds of food. Sheep which are foddered sometimes at one hour and sometimes at another—some days grain and sometimes not—sometimes three times a day and sometimes twice, cannot be made to thrive. Unlike cattle and horses, sheep do not eat well in the dark, and their last feeding should therefore take place at a time to allow them to consume their food before night sets in. Noon is the common time for feeding grain or roots, if but two feeds of hay are given; but if they are foddered three times a day it does not much matter at which meal grain is given, only that the practice must be uniform. In colder weather care must be taken to increase the ration, as the sheep then requires, and will consume, more nourishment.

Salt in the Feeding of Sheep—Sheep are not only benefited by salt, but they actually require it. Some consider salting the hay when storing in the barn sufficient, but this is not a wise method as the quantity is best left to the sheep. The salt should be placed in a box where they can have access to it at will, or may

be given by occasionally brining the feed of hay or stalks. In this case the fodder should be thoroughly wetted with brine, and left till the next day before giving, so that the saline matter may be absorbed by the straw.

Water Indispensable—Abundance of pure water is indispensable. If the sheep have not constant access to a running brook or spring, they should be watered plentifully at least once a day. This cannot be neglected without injury.

FEEDING OF HOGS.

Unlike the horse from which we get both reproduction and labor, the cow which gives us both milk and beef, or the sheep which yields both wool and mutton, the hog has but one object in his existence, which is, pork. He is bred and fed entirely for the food product that he may afford. The raising of hogs is however a very important branch of agricultural production, and has of late years been awarded more attention than formerly, and with correspondingly good results, experience showing that the profit of breeding and feeding is almost entirely dependent upon systematic and intelligent government of the kinds of food used, and the method of using them.

Hog Feeding of Benefit to the Soil—As with most other kinds of domestic animals, too little consideration is commonly given to returns which the farmer receives in the recuperation of his soil from the feeding of hogs. It ought scarcely to need repetition that good results cannot be expected from land which is not supplied with the materials which it requires for the reparative processes of nature, which are quite as essential to the soil as to the animal structure. Land which is not properly and systematically nourished will wear out and become exhausted and barren with as much mathematical precision as will the animal which is put to hard work without adequate feed. In considering the cost of any kind of stock-breeding, therefore, we should credit the expense of feeding with the actual and definite value which is returned to the soil in nutritive material in the shape of manure.

Value of Hog Offal as Manure—The following table will be found both interesting and valuable in this connection, showing definitely the relative value of the manure resulting from a ton each of various kinds of food.

By reference to this table, it will not be difficult to form an approximately correct estimate of the value of manure from a given lot of hogs, provided the amount and kind of food consumed are known. Thus, if a hog is fed exclusively on corn from the time it is weaned till it weighs 350 lbs., it will have consumed about 1,500 lbs. of corn, the manure from which is worth, at \$6.65 a ton, \$4.99. Hence we rightly deduce that for every hundred weight of pork,

live weight, we get \$1.42 worth of manure. On the basis of 80 per cent. of pork to the live weight, in the production of every hundred weight of pork, we get also \$1.78 of value in manure. Thus, in estimating the profit of feeding hogs on corn, we may calculate $1\frac{3}{4}$ cents per pound in addition to the price of the pork for the value of the manure obtained.

A TABLE SHOWING VALUE OF HOG MANURE FROM A TON OF FOOD.

KINDS OF FOOD.	PER CENT.					Value of manure from 2,000 lbs food.
	Total dry matter.	Total mineral matter (ash).	Phosphoric acid (phosphate of lime).	Potash.	Nitrogen.	
Linseed cake.....	88.0	7.00	4.92	1.65	4.75	\$19.72
Cotton seed cake.....	89.0	8.00	7.00	3.12	6.50	27.86
Rape cake.....	89.0	8.00	5.75	1.76	5.00	21.01
Linseed.....	90.0	4.00	3.38	1.37	3.80	15.65
Beans.....	84.0	3.00	2.20	1.37	4.00	15.75
Peas.....	84.5	2.40	1.84	0.96	3.40	13.38
Indian meal.....	88.0	1.30	1.13	0.35	1.80	6.65
Wheat.....	85.0	1.70	1.87	0.50	1.80	7.08
Barley.....	84.0	2.20	1.85	0.55	1.65	6.32
Malt.....	95.0	2.60	1.60	0.65	1.70	6.63
Oats.....	86.0	2.85	1.17	0.50	2.00	7.70
Wheat bran.....	86.0	6.80	7.95	1.45	2.25	14.59
Clover hay.....	84.0	7.50	1.25	1.30	2.50	9.64
Meadow hay.....	84.0	6.00	0.88	1.50	1.50	6.43
Pea straw.....	82.0	5.95	0.85	0.89	-----	3.74
Wheat straw.....	84.0	5.00	0.55	0.65	0.60	2.68
Barley straw.....	85.0	4.50	0.37	0.63	0.50	2.25
Oat straw.....	83.0	5.50	0.43	0.93	0.60	2.90
Mangel wurzel.....	12.5	1.00	0.09	0.25	0.25	1.07
Swedish turnips.....	11.0	0.68	0.13	0.18	0.22	.91
Common turnips.....	8.0	0.68	0.11	0.29	0.18	.86
Potatoes.....	24.0	1.00	0.32	0.43	0.35	1.50
Carrots.....	13.5	0.70	0.13	0.23	0.20	.80
Parsnips.....	15.0	1.00	0.42	0.36	0.22	1.14

The Best Way to Feed the Sow and the Young Pigs—The sow while engaged in suckling young should be given a large quantity of rich and diverse kinds of food. The drain upon her system is so great that it is indispensable that this loss be made good by the use of sufficient additional nutritious sustenance. Pigs at birth weigh on an average two pounds and a half, and at six weeks old their average weight will be from fifteen to nineteen pounds, dependent upon the breed and the way in which the mother has been taken care of. This enormous increase will illustrate what we mean in speaking of the drain which the suckling of the young pigs makes upon the system of the sow. When this additional food is given, it will be found advantageously supplied by the use of skimmed-milk and corn-meal, and oats and peas ground together. Oil-meal may be substituted for the milk, if the latter

cannot be obtained without too much inconvenience or expense. Before the time comes to separate them from the sow, the little pigs should be taught to eat of her food. They will drink milk when very young. Milk is the best food that can be given to young pigs in addition to the sow's milk; but, if this cannot be procured, then oat-meal and corn-meal, mixed together in equal parts with about one-fourth of the quantity of one part of oil-meal added, may be fed, and all should be cooked, and not fed otherwise. Corn-meal, without the intermixture of any other feed, is not desirable to be given to young pigs.

Proper Number of Feeds to be Given to Young Pigs—Whatever the food may be, it should be given in liquid form, and in order to continue the course pursued by nature, which teaches the young animal to suck its dam several times during the day, the feed should be given the young pigs from four to six times during the day for several weeks, the number of feeds being gradually reduced, so as not to interfere with the growth of the animal, until the number which is to make the constant habit of its life, three times a day, shall have been reached. Young pigs will be better when they can have a run on fresh, tender grass.

Importance of Pasture Feeding for Hogs—This is a very important subject to which too little attention is commonly given. The hog producer should understand that summer pasture is just as essential to the health and development of the hog as for any other animal. Even in the best corn-producing districts, there is no factor so great in the production of pork as summer pasture and green feed. It is not too much to say that only farmers who have pasture and grass lands well watered should undertake to raise swine in any large quantity. Freedom of pasture, which affords other animals the exercise which is indispensable to the development of their systems and the preservation of their health, is just as desirable for the same reasons for hogs, and the rich grasses which are so fruitful in supplying bone and muscles, also keep the system in perfect order, and offset the habit which corn may produce. Hogs will do well with but little grain, and in most instances with none at all, from early spring till the crop of corn is ready in the fall, if they are supplied with proper pasturage during the summer. Of course, when the fattening season begins, other courses of feeding are necessary. These remarks apply especially to feeding during the summer.

How Hogs are to be Fed for Profit—On this subject, there can be no better authority than Hon. Elmer Baldwin, whose experience and success, and prominent position among breeders of hogs place his opinions beyond question. He says: "The farmer who proposes to make money by raising pork must have a pasture for his swine during the season of grass. Without this, his balance is very apt to be on the wrong side of the ledger after selling his crops.

"Clover is supposed to be the best, but timothy is doubtless equally good. Blue-grass does well when better is not to be had; even a field of weeds is better than no pasture, as many varieties of weeds are excellent feed.

"When a sufficient range of pasture cannot be had, soiling does well. Clover or timothy, cut when green and fresh, is the next best feed to a good range of pasture.

"As soon as the grass starts in the spring, the hogs should be turned in, as they like it best when the grass is short and tender. They will subsist and grow well on grass alone, with a little salt occasionally. Some prefer to feed a little corn daily; it may or may not be the best policy; they will be farther advanced for fattening, but will not fatten as well as if none were fed during the summer, and with good pasture, water and shade, they will give good results. They will not fatten on grass, but it prepares them for fattening. Their systems are in a healthy state. They have no ulcerated livers or stomachs as they will have if fed on corn through the hot weather.

The Proper Process for Successful Fattening—

"Thus they are prepared by the first of September to commence the fattening process with sound teeth, good digestion and vigorous health. They will after that time promptly pay for all the food judiciously given. It may be, and doubtless is true, that a light feed of bran or light provender might be fed with profit during the summer, but it is doubtful if corn in any quantity is beneficial. Feeding on corn alone during the summer, except it be to send them to a summer market is bad policy; they become unhealthy, teeth sore, appetite clogged, and will not feed satisfactorily in the fall, and the comparison of expense in grass and corn feeding may be drawn as to which is the best policy. The cost of grass feeding, even with other light food, is merely nominal, while a hog fed with corn from the time it is weaned till butchered at eighteen months old will not, as a rule, pay expenses.

"The chief end of a hog is the weight and quality of his carcass. His value depends upon his being well fattened, and the object aimed at during his whole life is to prepare him for that event. If he fails in that, his life is a failure. Corn is the proper food for fattening, but not for growth. The fattening process is always to some extent a disease-producing process, and if long continued always so. But when the animal commences fattening in vigorous health, having lived for months on green vegetable and light food, his health will remain firm through any reasonable time required to become fat. But if fed uninterruptedly on heavy, hearty, dry food all his life, his health, if not already destroyed, is injured, and will yield to such unnatural living before there is time to fatten.

* * *

"The fattening process should be completed as soon as possible (and before disease supervenes) both for economy and to insure a

good, healthful quality of meat, and when the proper amount of fat is laid on, the animal should be slaughtered at once."

How to Change Hogs from Grass to Fattening Food—When hogs are changed from grass to concentrated food, there should be a method pursued in effecting the change. If it is made with too great precipitation there is danger that it will be attended with more or less bad effects, and possibly some of the animals may die. At first the concentrated feed should be of a light and cooling character made into a mash or slop. Bran, mill-sweepings, middlings and other food of such character prepared in that way may be fed at the same time with the grain, and it is still better if potatoes, pumpkins, apples and other foods of such character are mixed with the mill-feed, and the whole cooked together. Corn which is cut just about the time the ears are ripening may be fed to good advantage at this time, the ears, stalks, etc., being all cut and fed together. If pumpkins are allowed, it will be well to open them and remove the seeds, which have an injurious effect upon the kidneys and bladder.

Effect of Cob-Meal Ground with Corn in Hog Fattening—Corn itself is a very heating and stimulating food, and if fed constantly, not infrequently leads to derangement of the stomach, and in this connection it may be suggested; if grass is good for the health of the animal in summer, why not hay from good grasses, during the winter? Undoubtedly, properly prepared, cured grass, fed occasionally in winter, will be found beneficial in promoting the health of the hog. But the heating tendency of corn alluded to, may be also advantageously counteracted by grinding the corn and cob together and thus feeding them at the same time. The report made by two Farmer's Clubs on this subject will prove interesting and put the matter in a practical and intelligible light. They say: "We have long been satisfied that a certain amount of coarse material fed to cattle with concentrated food is both economical and profitable, but on account of the peculiar construction of the hog's stomach, we were not prepared for the result, which established the desirability of feeding coarse material in connection with corn meal." This report was connected with experiments made which immediately concerned three separate lots of hogs, of which one lot was fed corn-meal alone, wetted with pure water; another lot was fed with corn and cob-meal wetted in like manner; and the third was fed whole corn soaked in water. The first lot at the beginning of the experiment weighed 453 lbs., and when slaughtered, 760 lbs. The gain in live weight was 307 lbs. and the actual dressed weight was 615½ lbs. Lot No 2 weighed, when the experiments were undertaken, 467 lbs. The live weight at the time of slaughter was 761 lbs., which made the gain in weight 294 lbs. and the dressed weight was 593 lbs. Lot No. 3 weighed at the outset 456 lbs., and at time of slaughter 689 lbs. Their gain in live weight was 233 lbs., and the dressed weight was 567 lbs. These

experiments show that it took $5\frac{37}{100}$ lbs. of corn meal to make one pound of dressed pork. It took only $4\frac{75}{100}$ lbs. of the corn and cob-meal to make a pound of dressed pork; and of the corn unground it took $6\frac{31}{100}$ pounds to make one pound of pork. In view of these experiments, the value of cob-meal as food for hogs cannot be questioned.

Valuable Additions to Pasture Feed for Hogs—

If during mid-summer pastures are in such condition as not to afford sufficient food, then of course the farmer must supply other food, and in order to do this without using the advantage which green feed affords at this season of the year, an advantageous method of providing for this contingency is to have peas sown early so that they may be provided during the period of greatest heat, when pastures are most apt to suffer. Experience has shown that there is really no other feed so desirable as peas to be fed to hogs. Hogs fatten quite as readily upon them as upon corn, the pork is of superior quality and the cost where peas are grown to advantage is about the same per acre. Artichokes are also good feed for hogs, as has been established by the experience of Iowa hog-breeders. A. C. Vinton, of Vinton, Iowa, one of the most successful breeders of Poland-Chinas in the country, says on this subject: "The keep of my hogs in warm weather is blue grass, clover and Brazilian artichokes. Forty head of hogs and their pigs may be kept without other food on an acre of artichokes from the time frost is out of the ground till the first of June, and from September or October till the ground is again frozen. Hogs taken from the artichoke pastures to clover and blue-grass will not root up the sod, as they are free from intestinal worms, constipation, indigestion and fever, caused by feeding corn in winter."

How to Prepare Artichoke Pastures for Hogs—

The ground should be rich, ploughed eight or ten inches deep, the tubers cut the same as seed potatoes and planted from early spring to June 10th, ten to fifteen inches apart in rows that are three feet apart, with six bushels to the acre. They can also be planted in the fall from October 15th to November 16th, but the tuber should not be cut, and the ground should be thoroughly rolled after planting. If planted in the spring, plenty of rain in July and August will make them large enough to turn the hogs on in September; otherwise, a month later. If in foul ground they may be given a thorough working with a cultivator when three or four inches high, and when the hogs have been removed to allow a new crop of tubers to grow, the ground should be made smooth by harrowing, that the tops may be cut with a mower as food for horses and cattle. Enough seed will remain in the ground for another crop, but they may easily be eradicated when desired, by mowing off the tops and ploughing the ground deeply in July and the early part of August.

Importance of Good Appetite of Hogs and How Secured—What has been impressed upon the reader with regard

to the advantage of observing regularity in feeding of other animals, applies with equal force to the feeding of hogs. They should be fed at stated hours, early in the morning, at noon and in the evening, as much as they will eat cleanly. Whatever kind of feed is given, the suggestion that they should be given as much as, and no more than, they will eat cleanly, should always be observed. It is never wise to give any animal more than it will consume, or more than it will consume to good advantage. The main idea to be borne in mind, in regulating the amount of food, is that the animal may go to the next feeding with a good appetite. The perfection of the hog for the purpose for which he is destined, that of producing pork, will not be arrived at so much in consequence of the quantity which he may eat, as of the quantity which he can receive into his stomach, digest thoroughly and assimilate properly. It is desirable for the feeder to keep his hog in such condition that he will always have a good appetite at feeding time, and thus he will, without any delay or set-back, continue fattening until he shall have arrived at the condition desired, at the earliest period. If fed so as to get "off his feed," even for a short time, it will be so much loss.

How to Avoid Loss in Winter Feeding—It is important that hogs kept over winter should be sustained without retrograding. Like other animals, a large proportion of the feed, if they are not comfortably and warmly housed, will go to the maintenance of animal heat. Under any circumstances, three-fifths of the feed given goes to meet the natural demands of the system, and profit is only derived from that which is given over and above this proportion, and if they lack the proper shelter and warmth, a large proportion of the valuable material which should go to growth or fattening, is utilized in the maintenance of bodily heat. Salt should be given occasionally with the feed, and it is also advantageous to administer sulphur from time to time.

Hogs Fed in Connection with Fattening Cattle—In the West, where cattle are fed grain, it is not an uncommon thing to let hogs run with them, the hogs subsisting upon the dropping of the beeves and the feed which they waste. In some parts of the country also where cattle are fed in stalls, some feeders do substantially the same, by allowing their hogs to receive what has been left by the cattle in the same way. If the number of the hogs set apart to consume the refuse of the beef cattle is not too great, they will thrive sufficiently well. If there is a deficiency in the feed supplied in this way, of course it must be made up by other feeding. The experience of farmers who feed hogs in this way seems to show that they thrive remarkably well and that the grain which the cattle do not grind thoroughly and which they void whole, while herding in large numbers, has become softened by passing through the system of the beef so that it has become thoroughly digestible, and of a character to assimilate quickly and thoroughly when taken into the stomach of the hog. If either of these

methods is adopted, the feeder should be particular to see that there is a place provided where his hogs can be sheltered away from the cattle and protected from being trampled upon.

Philosophy and Value of Cooking Feed for Hogs

—It has been amply demonstrated by scientific experiment that the heat of the animal stomach is not sufficient to fully utilize starch. Pereira, one of the best writers upon food says: "To render starchy substances digestible they require to be cooked, to break or crack the grain." Raspail, a writer on the chemistry of foods, says: "Starch is not actually nutritive to man till it has been boiled or cooked. The heat of the stomach is not sufficient to burst all the grains of the feculent mass which is subjected to the rapid action of the organ; and recent experiments prove the advantage which results from boiling the potatoes and grain which are given to graminivorous animals for food, for a large proportion, when given whole, in the raw state, passes through the intestines perfectly unaffected, as when swallowed."

Comparative Value of Cooked and Uncooked Food for Hogs

—Every housewife is familiar with the fact that starch will not dissolve in cold water. It follows logically then, that those grains which contain the largest proportion of starch will be most benefited by cooking, and these (corn, rye, oats, barley) are the grains used to fatten hogs. Corn, the standard fattening food, contains 64 per cent. of starch, rye 54 per cent., barley 47 per cent. and oats 40 per cent of starch. When corn-meal is well cooked the bursting of the starch globules causes it to swell and occupy twice its former space, and from this some feeders argue that the cooked food is as valuable, bulk for bulk, as uncooked grain; or that the cooking renders the grain twice as valuable. Practical experiments, however, demonstrate the gain by cooking food to be about as follows: Raw corn will make twelve pounds of pork, raw meal will make ten pounds, boiled whole corn, twelve pounds, and boiled meal fifteen pounds of live pork, per bushel.

DIVISION SIXTEENTH.

HORTICULTURE.

CULTIVATION OF THE ORCHARD AND GARDEN.

The Value of Fruit in Farm Management—There is no farmer who appreciates the profit, and also the pleasure which, both himself and his family may derive from his occupation, who will not admit the desirability of growing fruit upon his farm. The fruits of which our climate is capable are as necessary as food articles as any other which can be consumed, and their use would go a long way toward the prevention of many ailments, besides being wholesome and agreeable. Aside from this, the cultivation of fruit affords both pleasure and profit.

From another point of view the farmer in our country will find the cultivation of fruit desirable. It will enhance the value of the land which he occupies. An orchard well located and in good condition, well cultivated and containing desirable fruits, which have been selected with care, will have a greater weight, when a farmer comes to offer his farm to a purchaser, than many other inducements which he might hold out, although the latter may have been created by the expenditure of much larger sums of money. Moreover, the fruit trees, once started on a favorable growth, cost nothing, while they yield an annual return and continue yearly to increase in value. The only thing they owe to the farmer is the cost of rent of the ground they occupy, and while the orchard space may be cropped to almost as good advantage as any other portion of the farm, it is useful in many other ways. The farm which is without an orchard is destitute of one of the most desirable and attractive elements which its owner can produce from the soil, and one moreover capable of an easy and certain profit, if the directions which it is the purpose of this department to give are followed with reasonable fidelity. There are of course, conditions of climate and soil under which the growth of fruit is attended with discouraging difficulties and drawbacks, which render success almost impossible. Still there is hardly any locality in which *some* kind of fruit will not thrive, and if it is *only* a plum orchard, the beauty it adds to the homestead, and the substantial returns it will give for the care and labor bestowed upon it, will well recompense the farmer for the cost of its possession.

How to Prepare the Soil for a Successful Orchard—

It is manifest that the first thing which the farmer who intends fruit culture should undertake, is the preparation of the land which he proposes to set apart for that purpose. Drainage is the first point which will demand attention, because trees will not do well upon land which is wet. Fruit trees will thrive best upon a soil which is soft and pulverized, and where the frost will not reach down to such a depth as to injure the roots of the trees. The more thoroughly cultivated the earth may have been, the closer it will cling about the roots, and the more nourishment it will be enabled to give. The simplest knowledge of the cultivation of fruit trees, will teach that until trees shall have become well-rooted, and have started out well on the way to maturity, they require all the nourishment which the ground can afford. Beside this, the inexperienced fruit-grower must bear in mind the fact that the trees which he is transplanting have been removed from the nursery, where they have received the best of care, and where the soil has been brought to the greatest perfection possible, because the nurseryman spares no effort in producing the very best of shrubs and trees for sale. The purchaser, intending to transplant, must prepare his soil with reference to this anterior state of existence. If this is not borne in mind the trees transplanted to the farmer's orchard will not thrive; they may grow for a time, but they will not exist for any number of years; and the fruit grower should bear in mind that he is not building for a day, but for generations. An orchard which will not be at its best estate at the end of a generation of men, or at least at the end of twenty years, will not have had the measure of success which may be attained, for at that period the fruit grower should have the right to look for the most abundant production. If he has started out aright in this respect, he may look then for thrifty hearty trees, yielding fruit in their season—trees of a vigorous growth, with the appearance of many years of life before them, but he cannot reasonably do so unless he shall have given attention to having the soil in which they are set, dry, mellowed and fine. It is not desired to have any person who may become interested in fruit imagine that the setting-out is all that is necessary, or that his orchard will not need the utmost care after he shall have planted it; but we wish to impress upon him that whatever labor he may expend, or whatever judgment or skill he may bring to bear, upon his fruit trees, for the production of fruit, after the first setting out, will not make up for negligence attending the inception of his undertaking. In fruit culture the manner and the time of creating the orchard are critical in the life and vital to the success of the fruit trees, and they have the closest connection with the profit which the owner will derive from his enterprise.

When to Use Fertilizers in Connection with the Orchard—Fertilizers of an exceedingly stimulating character should not be employed in excess near fruit trees at any time. It is

far more desirable that the soil where the trees are set out should be prepared and made fertile enough in the first instance, and afterward that the fruit grower should take measures to enrich it to a moderate extent, and so far as may seem necessary, during the succeeding years. However, the fruit grower must see to it that the soil upon which he desires to grow his orchard shall be rendered fertile, if it is not sufficiently of that character when he selects it: otherwise the orchard will never render him the profit at which he should aim.

Selection of the Young Trees—Orchard trees which are to be developed upon a farm should be small at the time they are transplanted, and their purchase should be made from dealers who have reliability, and upon whose judgment the fruit grower can implicitly rely. It is desirable that they should be planted in the ground in which they are intended to grow as soon after their arrival at their destination as possible. If, however, it is not convenient to plant them immediately, they can be taken care of for some short time (which, however, should never exceed a few days), by placing their roots in a ditch, and covering them with earth while they are awaiting setting out. The tops must never remain unprotected from the sun, and there should be no delay, except what is absolutely unavoidable, in placing them in the ground, so that their natural growth may not be retarded more than can be avoided.

How to Set Out the Young Trees—This is a simple process, but it needs to be performed with great care. The roots of the young trees which have become dislocated or broken, or injured in any wise in their transportation, should be properly trimmed, and not less than one-half of the branches grown during the season previous to that in which they are received should be taken away. It is necessary to emphasize this suggestion, because in disturbing the tree necessarily a large proportion of the actual root has been removed, and the equilibrium, which nature originally established between the top of the tree and its roots, has been disturbed. A hole, broad but not of excessive depth, should be dug for the reception of the young tree, and before it shall be placed therein, the roots of the tree should be covered entirely with a coating of mud; but there should be pains taken to see that this mud is not thick and heavy; it should be thin rather, and from the soil in which the tree is to be placed. One point in this connection we would call attention to particularly, and that is that the earth should not be replaced in the ground at any greater depth than that at which it was placed in the land where it grew; or, in other words, regard must be had to the natural formation of the soil.

How to Support Young Trees—In setting out trees in transplanting for the purpose of establishing an orchard, there should always be driven down in the ground beside them, if they are of large size, a strong post or stake. This provision for their protection should be made before the hole in which they are set is

refilled with earth, and, when this shall have been done, their roots may be compactly covered about with the fine and mellow earth of which we have said the soil of the orchard should be composed. It is of the utmost consequence that, as they are set in the ground, and before the earth is thrown in upon the roots, all the fibres of the roots should, as nearly as possible, be in their natural position. Then the soil should be put securely and firmly, not only around, but also under every part of the roots. The earth should be gently "tamped" as it is filled in about the roots, and should the season of the year be one of drouth, or should the earth be particularly dry, this process may be aided by pouring a little water occasionally upon the soil for the purpose of settling it, and making it compact and firm about the roots. When the trees are placed in the places prepared for them, those which are in need of support may be fastened to the stakes provided for them, as we have suggested. This, however, should never be done without binding the stem of the tree with cloth, so that there shall not be any danger of the bark becoming injured by the stake rubbing against it. Rotten hay or straw, sometimes known as mulch, should be laid down about the roots.

These few directions observed, with reasonable care the tree will thrive without further attention, and will yield fruit at its proper time of maturity. If the soil shows that there is a necessity for fertilization, then the fertilizer, whether it be of manure, guano, or any compost, may be added as the experience and observation of the farmer may suggest.

Best Season for Transplanting—What is the best season for transplanting trees remains a debatable proposition. Some persons, who are successful fruit cultivators, advocate the spring, and others equally successful advocate the autumn. Consultation with the best authorities leads us to the belief that the latter is the more advantageous season; but, notwithstanding this, so many have succeeded best from transplanting in the earlier season that it may well be left to the choice of the farmer, and governed by considerations of convenience. Much will, however, depend upon the particular part of the country in which the orchard is to be located. In the gulf States; and those which border upon the Atlantic Ocean, it seems that the season coming between the autumn and the spring, say, January and February, would be the more advantageous time. In the Northwest and in the North, and on the Pacific, we would suggest, if it be convenient so to do, that the intending fruit grower should make an experiment both in regard to the autumn and the spring, and select that season which the result shall show to be the more desirable for the actual locality in which he dwells. In different parts of our country, extending as it does through so many degrees of latitude, there are many varying seasons, and not infrequently a spring which would be considered most uniform is followed by an autumn which has all the good qualities for the

advancement of fruit culture, and experiment and experience will be the safer guides.

Conditions of Space Which Affect Success—Orchard trees require plenty of space to develop their growth, if the utmost return is to be expected from them. A fruit tree which is good-sized will send out its roots in every direction, and they will fill a very large space of ground, while its branches will extend a considerable distance from the trunk from which they spring. Therefore, if sufficient space is not allowed, and the trees are grown too closely to each other, neither the roots nor the branches will arrive at their proper development, and, as a necessity of the position, their production will not be what it otherwise would, for their branches will either lop each other and grow together, and the trees themselves will be as uncomfortable as men crowded together in a large concourse of people, and will overtax the resources of the ground. Besides this, the light of the sun, which is an indispensable requisite in bringing fruit to its ripening and in securing its proper color and flavor, will not be able to influence these results. Again, the excess of rain that may have fallen upon the roots of the trees over what is required for absorption will not be evaporated as in the course of nature it is desirable it should be. Another point which should be considered is that if trees are too near together the fruit gatherer will not be able to move about among them with his implements with convenience, and while the yield of fruit will be decreased, the labor involved in gathering it will be made greater than it should be.

How to Economize Space in an Orchard—In the establishment of the orchard, it may be desirable to economize all the land in it, and this may be accomplished by setting out smaller trees between those which are intended to yield large fruit; and this course of proceeding will not be detrimental because, while the trees to produce large fruit are growing, they do not demand so much space as when they shall have reached their growth, while the dwarf trees, which have not so long a period of existence as the others, will disappear before the others have reached sufficient growth to be crowded, and while the profit from them shall have been enjoyed, their disappearance will leave sufficient room for the development of the others. This course may be pursued in any case when the fruit grower shall desire to have the product of his fruit realized upon without delay; but if he shall not be inclined to this course, if there be no necessity for realizing at once and he have particular regard for the appearance of his orchard, there is no necessity of growing these smaller trees.

Proper Distance Apart for Planting Standard Fruit Trees—APPLE TREES which are intended to yield the larger kind of apples, may be set about forty feet distant from each other, and those which are intended to yield the smaller varieties of apples at from thirty-two to thirty-six feet apart. Dwarf apple trees if they

are set out for the purpose which we have suggested—to economize the space and give fruit while the standard trees are maturing—may be placed at about midway between the larger apple trees.

PEAR TREES. These should be set out at not more than twenty-six feet from each other, and if dwarf pear trees are planted, they should not be distant from each other more than fourteen to sixteen feet.

PEACH TREES may be located from eighteen to twenty-one feet apart; if the fruit grower intend to prune these trees very closely, then fourteen to seventeen feet will give all the space necessary for their growth.

CHERRY TREES which are intended to produce the most desirable kinds of this fruit should be placed from seventeen to twenty-one feet from each other, and the dwarfs of this variety may be set out at from nine to thirteen feet apart.

PLUM TREES may be planted to advantage at from fourteen to sixteen feet from each other.

Number of Young Trees to Set Out During any Year

—On the average farm the trees which are to be planted during a season should not be very many in number. In this wise, there will be both time and opportunity to do the labor involved without encroaching on other work, and the trees themselves will probably be given more care than otherwise; and this is a matter entitled to consideration, because ordinarily fruit trees which are set out will be of various degrees of development, and the produce which they yield will vary as much as themselves do. Under this method the fruit grower—who will of course have taken pains to keep a record of his trees, to note the character of each, and the time of its setting out—will be prepared for the condition to which his trees may come, not relying solely upon what nature shall develop for him, and when a tree shall show signs of age or unsuitableness to the soil or other conditions it can be taken away, and this without detriment to his orchard, because there will be a sufficient quantity of vigorous trees arriving at their maturity and productiveness just as rapidly as the others cease to be of value. And there is one other point which may be borne in mind in regard to this last suggestion, and that is, that if the design of setting out a few trees every year is carried out, the fruit grower will have greater certainty of a yield each year, without intermission, because some of his trees will undoubtedly give him their fruit during what otherwise would be off years when his standard trees might not be fruitful.

How Fruit Trees Are to be Cultivated—When the fruit grower shall have established his orchard, he cannot wisely allow the trees to go unattended, for if he does, he will not find his fruit product as satisfactory, either in quantity or in quality, as if it had received due attention. These being the objects which he is seeking, and through which he must look for the profit which he has a right to expect, he will find it to his greatest advantage to

continue the cultivation of his orchard for some years after he shall have first planted the trees in it. There is no necessity for leaving the soil of his new orchard to the trees alone, for while they are young, there will be no detriment in growing a crop of roots, turnips, beets, or potatoes, but it will not be well to seed to grass or grow to grain or corn, or plant with corn. If the ground is to be plowed this labor must be performed with care, so that the trees or their roots may not be injured. The ground should be continued pulverized and soft, as we have suggested concerning its first preparation. It should be fertilized well, and if manure is used that fertilizer should be mixed well with the ground. Old trees if there are any in the orchard, should have rotten straw, or hay, and plenty of manure placed about their roots. They will in this way thrive better without the care which it is necessary to give young trees. In laying manure about a tree, it is not advisable to place it too near the trunk, because inasmuch as the roots extend out from the tree for many feet even when the trunk of the tree is small, the sustenance which the fertilizer will give is required not immediately at the trunk, but where the roots are. In fall, fertilizers of manure or some other compact substance should be placed right at the foot of the trees for the protection of them from vermin. When spring comes the fertilizer thus used can be scattered about over the ground beneath the trees. Weeds should be carefully removed. Small trees will not thrive if they are surrounded by grass or weeds. Poor and unproductive fruit yielding trees are not infrequently the result of the want of proper attention to this idea of keeping the ground about them thoroughly weeded.

Trimming or Pruning the Orchard—This is not difficult if the work is undertaken at the proper time and be carefully and thoroughly completed; but if the trees are left uncared for for too long a time, then the work will be rendered difficult of performance, and its result cannot be expected to be entirely satisfactory. With old trees that have been allowed to go without care for some years, the proper course to pursue will be to remove a large portion of its upper branches, so that it may be reduced to a good shape. With trees of young growth, cutting in a hap-hazard fashion will be deleterious, and may result in their absolute destruction. Ordinarily, when the management of the fruit orchard is what it should be, it will not be necessary to take away large branches of any tree.

When to Commence Trimming—This should be undertaken immediately after the tree has been transplanted, and in each succeeding spring all the limbs which shall have spread out, and which it is not advisable to retain, should be lopped off. While the trees are small a knife will be a sufficient instrument for the work. As they increase in size it will be necessary to use pruning shears and a saw. Sometimes, buds will be found shooting out in parts of the tree where they are not desired, and these can be taken off without

trouble by picking or rubbing as they may be noticed during the summer.

How to Trim Fruit Trees—Limbs of several inches in size cannot be removed without detriment to the tree. This weakening of the tree may be avoided by proper care from the outset. The limbs are the development of buds, and if these had been picked off when they first appeared, the necessity of removing a developed limb would not have occurred. But if they are not picked off that is no reason why the limb should be allowed to complete its growth. When the first season shall have passed the slightly-developed limb can be cut easily with the knife. There is no good judgment involved in allowing these undesired limbs to mature, and it is easy to avoid it by paying the simple attention which we have suggested, and the tree instead of developing something that must ultimately be taken from it, to its serious injury, will conserve all its forces in perfecting the form and character sought. The fruit grower can do much in the way of creating a particular form which the tree shall have when it has arrived at its maturity. There is no difficulty in so directing the growth that the branches shall spring out very near the ground, or that the top shall be broad or narrow, or be of any particular shape. Trees do not grow in height in the same measure that their trunks increase in the distance around them. This principle in the growth of trees is not always thoroughly understood, and in order to have the branches near the ground, many fruit growers allow the buds to sprout, thinking that in the end they will be the lower branches of the tree. But if the course of the development of trees is observed it will be noted that the trunk has developed in size, while the tree has not increased in height, and these branches which have been permitted to grow must have been noticed as being almost as near the ground as when the young tree was transplanted. In what manner the tree shall be desired to branch out, whether close to the ground or high above it, must depend upon the part of country in which the orchard is to grow. In climates where there is a continuance of high winds, and where the winters are severe, trees which are of low height and whose branches are close to the ground, will be more desirable than those of different appearance. If the fruit grower shall determine to devote the soil of his orchard to purposes other than the mere perfection of his fruit trees, and in the process of his cultivating shall find it necessary to plow or mow, of course it will be much more convenient for him to have the lowest branches of the trees at some considerable height from the ground. But if the orchard is to be an orchard merely, then trees which are easy of approach, and to be picked, will be most convenient, and these are they which grow their fruit near the ground. Limbs which show a tendency to grow crookedly, or to interrupt the development or the yield of other branches, should be pruned off. Sunlight is an indispensable element in bringing fruit to perfection; therefore the uppermost branches of fruit trees should not be so close togeth-

er as to shut that out; besides, what the sun will do towards advancing the fruit to ripeness, it will also do towards giving it the color which it ought to have. But it is important to guard against having the upper branches of the trees so wide apart as to afford no protection against the severe winds and the hot rays of the sun during midsummer. The winds will make the bark dry and brittle, and the hot sun will scald and destroy it. Trimming, if looked after at the proper time, and with regularity, as each season follows another, will be highly beneficial: the trees will continue in good form and health; but disregard of proper business rules in fruit growing, will have the same result as neglect in any other kind of business. Doing the proper thing at the proper time and in the proper way is the rule which should be observed in pruning trees, and if observed, but a slight amount of work will suffice, whereas if disregarded, the time will certainly come when the labor must be performed, and then it will be at the cost of greater labor, and with not nearly so good results.

How to Regulate Fruit Production—The neglect by farmers to take sufficient care in thinning out the fruit is the cause of many unfruitful seasons through which trees pass. Sometimes it will be found that a tree will yield excessively one year and the next year little or no fruit. The reason is that the exhaustion occasioned by a yield too great for the resources of the tree compels a cessation of production in order to recuperate the tree. It is nature's process, and belongs to the law of compensation. It may be observed that in the year of excessive fertility, a large proportion of the fruit will not mature properly, but the drain upon the tree is the same. If the fruit had been thinned to the proper proportion the actual results would have been greater, as there would be a greater quantity of perfect fruit, while the barren year would probably have been avoided. The only way to restore trees to the normal bearing condition is by thinning, and this should be done very early in the season. When the fruit has become fairly started, and before it has reached half-development, the horticulturist should remove a large proportion of it, leaving the best developed and enough to make a good ordinary yield. Some destroy the blossoms by beating, but this is liable to injure the delicate twigs. Thinning involves careful labor, but it is well repaid in the results.

When and How Fruit Should be Gathered—Fruit should be gathered just at the time when it is ripe. It should be gathered carefully so as to prevent bruising and carefully assorted so that it will stand being packed and stored. That which is intended to "keep" should be gathered sooner than fruit which is intended for immediate consumption. If it is intended to send fruit to market, it should be gathered from the trees a little before it has become fully ripe. But while this ability to transport well is obtained in this way, the fruit will not have its perfect flavor.

Fruit which is intended to be used in the winter should be gathered before it has become mellow. Early apples for the use of the grower himself and his family, should be allowed to remain un-gathered until their color has deepened and they have become mellow. All fruits should be picked in anticipation of frost. Pears can be gathered to good advantage before they become thoroughly ripe; the best time for this is when the fruit will detach itself easily from its twig. Some varieties can be gathered earlier than this, but it is generally better to leave them until the time mentioned, while some will be useless if plucked at an earlier time. Fruit gathering should be completed just as rapidly as possible. Fruit should not be gathered in when it is wet, and the fruit grower should be particular to see that it is dry before it is stored for the winter. Hand picking is the proper way to gather fruit, as bruising is to be guarded against with the utmost care. As each one of the various kinds of fruit is gathered it should be *laid* in the receptacle provided for it, and never *dropped*. Attention to this detail, simple as it seems, will answer a good purpose, because bruises which are imperceptible at the time when the fruit is gathered will develop after a short time, and the value of the fruit will be deteriorated. Market apples which are large should be taken out of the basket for the packing by hand. They should not be turned out or rolled one upon the other. It is wise in gathering fruit to spread them out and let them lie some time upon the floor before they are stored away. The fruit will keep better for this care, and it will be more convenient for assorting and grading properly. Apples which are barreled immediately upon gathering must unavoidably contain some which are not perfect. These imperfect ones will decay much more rapidly than the others, and their condition will have an unavoidably bad effect upon the perfect specimens. The fruit should be taken to its store room before the weather becomes sufficiently cold to injure it. The necessity of care in assorting fruit must not be overlooked. The riper should not be barreled with that which is less ripe, and large fruit should not be packed with that which is small. There is economy in this, because the few small specimens of fruit will be of but slight consequence in increasing the measure, and the value will be very considerably less in market. When fruit is being barreled it should be "shaken up" frequently; the barrel head should be made firm in its place and fastened strongly. The weight thus pressed down upon the fruit is necessary, because the fruit must be held securely in the barrel; otherwise, in the course of transportation, it will be shaken about and bruised. The fruit grower will find that the care thus expended will be more than repaid in decreasing the percentage of loss by decay, and increasing the market value of his fruit.

HOW TO PROPAGATE FRUIT-BEARING TREES AND SHRUBS.

There are divers ways of conducting this important part of the business of fruit culture. First, by planting, which is the course pursued by nature; second, by "budding," and third, by grafting. All fruit trees are originally the offspring of seed which has been planted in the ground; but these trees themselves subsequently are changed in their character by the insertion into their systems of buds or grafts which have been taken from other trees.

It is a curious fact that a fruit tree which has grown up from the seed, will not unlikely yield different fruit from that of the tree upon which was grown the fruit from which the seed was taken; but if propagation be made by budding, the fruit which will be yielded by the branch developed from the bud will almost invariably be precisely like that of the tree from which the bud was taken. The reason is that the bud has arrived at a more perfect state of development than the seed, and received into itself a sufficient part of the nature of the tree upon which it grew, as to be sure of having and of expressing in its own produce, the particular character of its own tree. In view of these facts, the farmer will find it wise to propagate fruit trees by budding, rather than by seeding, and to pursue the same course as to the smaller fruit-bearing plants and shrubs. The chief means of propagating the different varieties of the larger kinds of fruit trees is by grafting or budding. The grafting mode can be used with trees of whatever size, and can be applied also to the roots of trees of the smaller varieties.

Grafting is performed in various ways. Those preferable in the farm orchard are *cleft-grafting*, in connection with trees which are mature, and *whip-grafting* for those trees which are of smaller growth. The former is employed when the tree to be engrafted is larger than that which is intended to be attached to it, and it is the manner of operating when the tree to receive the new fruit has grown to considerable size.

Method of Cleft-Grafting—The express manner of performing the *cleft-grafting* operation is to saw off the stock, and split it through the middle, and then in the split insert the scions (two), having made their ends wedge-shaped. Some persons in performing this operation place these scions in the split quite straightly; the course which others follow is to set them obliquely. The upright one is the better, if the work be performed in a good and workmanlike manner, but if the operator is careless, and not sure of what he is doing, the slanting way will be for him the surer one. Of course the result to be attained is to so set the scion as to have its inner bark connect exactly with the inside bark of the tree upon which the propagation is undertaken, and these barks will unite for some distance if the scions are straightly placed, but there must be care taken about this, or the barks may not unite anywhere.

However, there will be some point of contact between the scions and this stock anyway, if the scions be obliquely set. Having been placed, the end of the engrafted branch, and its circumference, so far as the cleft or split in it shall extend, should be covered thoroughly with the wax which is prepared for grafting purposes. This can be compounded from resin, tallow and beeswax, the parts of each constituent being equal, and melted and thoroughly mixed with each other. If the mixing of this wax shall be continued by working the particles together in the hands until the whole mass is almost cold, it will be of a better quality.

Method of Whip-Grafting—This is the method to be employed upon trees of small growth. It is done by the use of a stock and a scion which are of equal size, the end of each being cut in an angular shape, so that one will lock into and fit closely the other. When two parts shall have been fitted, the place where they are joined together should be tied firmly, though carefully, by wrapping cloths or yarns about it, pressing the parts closely against each other, and smearing with grafting-wax, in which position the engrafted limb should be left until the expiration of ten days or thereabouts, when the strings which have held the united parts together, may be cut; and if the two parts have become well knitted together during the interval, and their union seems to be strong, the operation can be considered successful. If not, the protection should be again placed over the joint, and should remain there until the parts shall have become entirely engrafted with each other. The time of the year when grafting should be done is as early in the spring as may be after the sap shall have commenced its circulation through the tree.

Method of Budding—For the purpose of multiplying the growth of desired varieties of fruit of the large kinds, budding is more generally used than any other manner of grafting. It can be accomplished with ease and success if reasonable care is exercised in performing the operation, and it will rapidly increase the production of any especially valued variety of fruit. The operation is most successful when undertaken upon trees which have had the advantage of the development of a year or two; and upon trees which have reached a matured growth, budding can be performed to good purpose, if the attempt be confined to small branches. The manner of performing the operation is to make a cross cut at some smooth place on the stock, in which the bud is to be inserted, and downward from this cut, make with the knife a slit from one to two inches long, lifting up the edges of the bark somewhat with the knife point. Into this slit the bud, which must have been removed in connection with a little wedge of the wood of the tree from which it is taken, should be inserted and pressed downward, so that it shall be held firmly in its place, and then the stock should be bound by bringing round it cotton yarn or cloth, and tying them in such wise as to press the bark of the stock close upon the bud. In tying this

yarn around the stock, of course, it will be necessary to be careful to see that the binding strings do not press upon the eye of the bud which has been inserted. Mid-summer is the time of year when budding should be undertaken. The directions which we gave under the head of cleft grafting, for continuing the support or bandage about the engrafted limb, until the union between the scion and the stock or branch should have become complete, will be applicable here. In the spring following the budding the tree should be cut off two or three inches above the place where the bud has been set in, if small, or the branch, if the budding shall have been done upon a tree of large size. Whatever shall start up or sprout upon the stock or branch should be removed without delay, in order that the development of the bud shall be permitted to the utmost. The horticulturist will find this method of budding the more desirable, unless he shall be undertaking the improvement of hardwood trees, or of grape vines, and with them he may use ring budding, as it is called, which may be done by removing the bark in the manner of a ring or circle about the width of a fourth or three-eighths of an inch from the stock, setting in another circular piece in which the bud wished to have grown, shall be contained.

PROPAGATION AND CULTIVATION OF VINES AND SMALL FRUITS.

There are two generally employed methods of accomplishing propagation: by layers and cuttings.

Layers—By the use of layers, shrubs, like the red raspberry, vines like the grape, and others, can be propagated with success. This way of increasing the fruit yield is a surer one than that of cuttings, but it may be carried to such an excess as to deteriorate the plant by the process. If one or two grape vines, firm and strong, are laid down, and a portion only of the sprouts of the plants be engrafted, leaving the remaining parts to continue their growth without artificial aids, it will be found the best way. The grape vines should be laid in the spring, as the buds are putting forth. With the greater part of the varieties, there will be necessity of bending a strong sprout down into the ground, and fastening it there, then casting over it to the depth of some inches, soil pulverized and mellow. If the object is to produce but one new plant, there should be left above the ground an end of a shoot cut to one bud for service, as the stem or stock of the plant alone is undertaken to be grown. All varieties do not create their roots with the same readiness. "Tonging," is cutting the vine where it bends downward and drawing the knife forward in the center, to make a slit an inch or two in length. Ordinarily, this cut is made just beneath the bud, but it may be at the side or above it. When this method

is pursued, the vine must be affixed to the ground and earth thrown over it. If the attempt is made to propagate a number of plants, a vine firm and strong, starting upward close to the ground, may be selected. A small ditch about half a foot in depth should be dug, in which the vine should be placed and there confined securely. As soon as the buds shall have advanced somewhat in growth, this little ditch should be filled with pulverized mellow earth. By this method there can be grown from each bud on the vine, a new bud.

Raspberries and plants of that family, when they are to be multiplied by this layering system, should not be subjected to the operation until their points or tips are quite denuded of leaves, and their color has become a dark purple. This will have occurred during the last summer or first autumn month. The vines in the small ditches should be overlaid with earth to the depth of four or five inches, and the ditches should be dug at an inclination of about forty-five degrees. In a short time, not more than a few weeks, the roots will have become plentiful, and the new plants can be removed from the ditch. The vines or canes should be cut at about six inches in height.

How to Use Cuttings—The manner of propagating small vines and fruits by cuttings, and the way in which they may be set, is as follows: Select a place in the garden, or other soft, mellow ground, make a hole of depth sufficient to receive the cuttings, which are to be placed therein and left to lean against the side at a slight angle, leaving the topmost bud of each cutting on a plane, with the ground, after the hole shall have been filled and the earth smoothed off, although it will not be material if these buds are sometimes exposed above the surface. The cuttings in this hole should stand about half a foot distant from each other, and the hole filled by casting the soil into it about the buds which are at the foot and midway up the buried slips, about which the ground should be pounded in firmly, making it as close as possible by stamping or settling with a mallet. Afterward, continue the filling up of the hole, and pound the soil down again, but in such wise as to hold the slips firmly at the angle in which they have been placed. The cuttings can be thus set early in the spring, care being taken to cover them in the ground without delay after they come to hand. Seventy-five to eighty per cent of the plants thus set out, will have become good vines by the time summer shall have passed. It is well to take precaution for the protection of these growing cuttings from the sun, which can be accomplished easily, by simply placing a board, which shall slant over them and shut off the sun during the hours of the day when it is hottest. If the weather is dry the cuttings should be carefully watered two or three times each week. When this method is used the slips should be prepared in the autumn from the well-developed plants of the season next preceding. In cutting the slip, there should be left, at its foot, some portion of the wood of the parent plant. Slips may be prepared by cutting

the vine beneath the bud which is the lower, and from one and three-eighths to two inches higher than the uppermost bud. Frequently, the slips can be left from three-fourths of a foot to one and one-half feet in length, and include quite a number of buds; but there is no particular advantage in having the buds exceed three in number. Horticulturalists often select those having but two buds, and with plants which are of decided value they employ frequently bud cuttings which are single. Slips should be removed only from plants which are well-matured. There is no reason why they may not be severed, unless the weather be very inclement, at any time before the growth shall commence in the spring, and the buds begin to swell, but it is better to prepare them in the autumn between the time when leaves begin to fall, and the setting in of the winter weather. They should be buried in dry, pulverized, mellow earth or stowed away in dampened moss or grass, or even sawdust in the sod.

Proper Method of Cultivating Small Fruits—The method best adapted to the farmer is to place the plants in rows, about thirty inches apart; the plants twelve inches from each other. Larger plants may be farther apart in the rows, but if it is a yield of berries to which he looks, the yield will be greater when the distance is less.

Strawberries—The soil of the strawberry-bed should be soft and mellow and of decided fertility. In setting out the plants, make the excavations broad, to permit the roots to extend themselves. Previous to placing in the ground, remove most all the leaves and smear the roots with mud from the soil in which they are to be placed. Plants should be set in the ground in spring or early autumn. Autumn plants, in good condition, will yield a portion of a crop the next year, but while spring plants will not yield so largely the same year, they will have plenty of strength and vigor, and are not so subject to the danger of being killed by the frost. Strawberry plants need constant cultivation, because the beds must be kept entirely free from weeds. It is a better way to guide the runners so as to grow between the plants, as they are thus more easily kept clear of weeds, and the plants should be definitely set in hills, making it easier to keep them clean and free from weeds and conducing to a better growth. Protection from winter, and from freezing and thawing, is indispensable, and a layer of three or four inches of straw will be found the cheapest and most effective means.

Blackberries—The blackberry grows wild in almost all parts of the country, but can be greatly improved by cultivation. The bushes require more space than the raspberry; they must be trimmed carefully and constantly; the ground must be cultivated frequently, but not to a great depth, and it will be found useful to lay hay or straw close to the roots of the bushes. The trunks should not be allowed to grow higher than three and a half feet, nor

the branches, without frames for their support, to extend more than two feet outward.

Raspberries—The raspberry is a favorite fruit in America. The black will thrive in almost any sort of ground, but the red variety is more delicate, requiring damp rich ground for their growth. In setting out, it is better to adopt the system of hills and rows. Red raspberry bushes may be placed about three and a half feet apart, but the black need about five and a half feet of distance. Raspberry plants may be set out either in spring or autumn. The trunks or canes of the bushes should be severed at the surface of the ground when the setting out is completed, and fruit should not be expected until the season which succeeds the planting. If there are indications of fruit, trim the bushes closely. In midsummer the bushes should be cut down to ten or twelve inches from the ground, and the shoots which have started out from the sides should be lopped off. In the season following the planting, the bush should not be allowed to rise higher than about twenty inches, and the stems setting out from the trunk should not be permitted to exceed that distance in length. In this wise the roots of the bushes will be made firm, and the bushes themselves and their branches strong. If care be given to these suggestions, the bushes will be firm enough to develop their fruit without supports. In every year raspberry shrubs will send out in the branches enough to supply the yielding trunks for the succeeding season, and only such quantity of shoots as are necessary for this purpose should be permitted to develop, and any excess should be taken away. Raspberry bushes develop in one season, yield fruit the second season, and then become unfruitful; hence, after the berries have been gathered the trunk by which it has been yielded should be cut down close to the ground. Weeding must be attended to. Moist, pulverized, mellow soil should be cast over the canes after they have been cut off for protection during the winter.

Currants—This fruit is produced without great trouble and is prolific, but will yield better, and be more desirable in every way if it has cultivation. Placing rotten hay or straw about the roots is a good way to cultivate them in any part of the republic. Currant bushes should be trimmed, and the portions which have reached maturity removed. The fruit will develop well upon bushes that are from one to three years old, but those which have yielded for a long time, will not produce so plentifully as young ones. It is wise to allow not more than the four canes to rise from one root, and also to set out new plants at intervals of every three years. In setting out currants, they should be planted at about three and a half feet distant from each other, and there is no danger of having the soil in which they grow too much enriched. The cultivation of currants can be extended by the system of layers or cuttings which we have described.

Gooseberries—This fruit is yielded by bushes which are very similar to those of the currant, but the production of the berries will need more careful management. They are developed best in ground which is fertile, and they need careful attention. The bushes should be trimmed after the leaves have fallen.

Cranberries—This fruit will yield best in ground which is wet, and they can be supplied with plenty of water to very great advantage. It grows without cultivation in many parts of the country, but cultivation will advance it both in quantity and quality. When the cranberry shrubs are set in land which is wet the surface water should be drained off. Transplanting should be made from places which have yielded well, and when they are re-set they should be placed in rows from eighteen to thirty inches apart. If those who have no low lying land, find it desirable to cultivate the cranberry, some varieties of the fruit which grow upon upland can be set out and fruit return can be looked for. If the soil in which the fruit is growing is made fertile by the application of fertilizers or muck, it will improve them. Cuttings will take root easily, and will prove prolific. When the cultivation is undertaken, the plants should be set out early in the year; but this is not indispensable; they will exist and yield if put out in the autumn.

ENEMIES OF THE FRUIT GROWER AND HOW TO DESTROY THEM.

The Cherry Slug—This insect is particularly the enemy of cherry trees and pear trees also. It can be expelled by throwing upon the trees dry ashes each day, while the dew is still upon the leaves. The slug has a smooth skin, somewhat like jelly, and its appearance is somewhat like that of the snail.

The Rose Bug—This pest destroys the blossoms and the leaves also of grape vines and apple trees as well as rose bushes. It is a parasite, and it can be exterminated if it attacks grape blossoms only by being actually removed by picking it off and destroying it. The best time to do this work is early in the morning. If the rose-bug is found upon apple trees, it may be removed by shaking the limbs, first having put tubs or pails of water under the trees to receive the bugs as they fall. It is indispensably necessary to be on the watch for this insect, and commence its destruction early in the season, and carry it out vigorously until it shall have disappeared.

The Curculio—Plum, cherry and apple trees are subject to the attack of this insect, which is small, and when it attacks the fruit, bores into it, depositing its egg. This develops the young insect almost immediately, and in a short time the punctured fruit drops, when the worm leaves it and passes into the ground where it becomes transformed into the beetle, which in its turn lays its eggs, and thus the existence of a destructive race is ensured. The curculio

appear yearly, and if not destroyed, will certainly ruin all the plums in an orchard, and a cherry crop need hardly be looked for. It not infrequently will remove all the plums which appear upon a thrifty tree, leaving not a single one. There are two ways of destroying this insect. Spread cloths under the tree in the early morning, at which time the insects are dull, and then shake the tree by a sudden movement, and be particular to destroy all that come down. This sudden jarring which may be done by striking the tree quickly with a mallet (being particular to protect the tree itself from the marring which the blow may give), will be more efficacious than merely shaking it. If when this shaking is done any of the fruit drops, it should be immediately destroyed. Another way to remove the curculio is to sprinkle the trees three or four times a week, from the time when the blossoms disappear, until the ripening of the fruit, with fine coal ashes.

The Currant Worm—This insect destroys currant and gooseberry leaves, until the bushes are stripped. A remedy for it is to apply powdered white hellebore as soon as the worm appears, either sprinkling it dry over the leaves, or dissolving it in the proportion of a tablespoonful of hellebore to a pail of water, and then sprinkling the mixture. Great watchfulness is necessary to keep off the currant worm, because its depredations are so rapidly completed, that it will render bushes actually leafless in a very short time, and if the leaves are taken away, the fruit will not mature, and the bushes will be injured.

Caterpillars—Various species of this insect are among the worst foes of apple trees. They eat the leaves, and not infrequently render large trees unproductive. Of caterpillars, THE FALL WEB WORM, is a species. It destroys different trees. It leaves its egg on the nether side of the leaf near a twig's end. These develop, and the worm spins its thread so that several leaves will be attached together, and keeps on eating and spinning along the twig until they remove every leaf it bears. This species is of small size, has black feet and head, thick white hair on body, dark colored stripe on back, and is pale yellow in color.

THE TENT CATERPILLAR—This species hatches when the trees begin to open their leaf buds in the spring, and destroys leaves until it arrives at its full development, existing during the summer, then changing into a brown miller, encircling the smaller branches of the trees with eggs and then dying. These eggs will themselves become caterpillars as the spring opens, they being deposited at the end of the summer, and will renew the attack upon leaves and fruit.

REMEDY FOR THE WEB WORM AND CATERPILLAR—The most efficacious way is to cut off and destroy by fire the branches where the eggs have been laid. This work may be accomplished in winter or in early spring, but must be done surely before the worms have developed sufficiently to begin their work.

The Canker Worm—This insect destroys leaves and fruit. The female has hardly any wings, and therefore she is compelled to climb the tree to deposit her eggs, which she attempts when the winters are mild, and in the early spring; sometimes in the autumn also. This ascent of the tree is prevented in various ways, one of which is to encircle the tree with tin rings, bending down the outer edges. Oil placed in shallow pans or vessels, so that the moth cannot pass beyond it, is also used.

The Apple Worm—This attacks the apple blossoms and the young fruit. Its method of destruction is to eat the fruit at the core, and thus it falls to the ground before it is ripe. The best remedy is to remove the fallen fruit and literally destroy it, by having it eaten by the hogs or some other way, to insure destruction of the insects contained in it.

The Borer—This insect is very destructive to quince and apple trees. It bores into the tree near the ground, laying its eggs under the outer scales of the bark. When the insect is hatched, it enters through the bark, remaining there and feeding upon the tree. When they have increased sufficiently in size they enter the tree.

The borer may be removed with a pointed instrument, if its destruction be undertaken early enough before it has entered the wood. After that time something sharp and flexible should be inserted in the hole made by it, to destroy the insect. It is well to look after the trees at short intervals during the summer, while the fruit is ripening, and attend at once to the destruction of the borers.

The peach tree is subject to the attacks of an insect which bores the bark, but does not enter the wood as far as the borer which we have just described enters the apple or quince trees. Its presence can be determined by the dust and slime which will come from the hole it bores. These should be removed and the grub or worm can be killed. Ashes placed in a heap about the trunk of the tree, while the season is still young, or encircling the trunk of the tree with some stiff paper, will do much toward keeping these insects away.

The Apple Bark Louse—This is the especial enemy of apple trees; they make holes in the bark, and suck the sap out of it. Linseed oil and tar mixed in equal proportion may be usefully employed to destroy the louse, the preparation being applied warm (not hot) in the early spring. Soapsuds, applied to the trees with a stiff brush, scraping and scrubbing the trunk, will also be a successful preventive.

Other Pests—There are other kinds of plant lice, which live upon fruit tree leaves, and are greatly injurious. These lice accumulate beneath the leaves, and suck out the juice. Soap made from sperm oil can be applied to the tree, and will be a successful remedy. It should be applied with reasonable care, because if it is too strong, it will affect the leaves as well as destroy vermin. It should be sprayed over the tree.

DISEASES OF FRUIT TREES, AND THEIR REMEDIES.

Mildew—Trees are subject not only to the attacks of insects and vermin, but also to various diseases. Among these mildew is liable to destroy the gooseberry and the grape. As soon as mildew appears upon the grape vines they should be sprinkled with sulphur, which treatment should be continued, renewing it every two weeks until the necessity for it has passed. When the gooseberry is subject to the disease, its roots should have plenty of rotten salt hay applied to them as a mulch. Peach trees are also subject to mildew but not so greatly as the gooseberry and grape.

If lime-water is added to the suds, and the trees dusted with sulphur, and powdered sulphur be used for sprinkling the trees, the treatment will be as good as any which can be recommended.

Leaf Blight—This is a disease of pear trees. The leaves turn black and are dropped and development of the tree is then dwarfed. A rich soil kept under cultivation will assist the horticulturist in preventing this blight. In the West apple trees are frequently injured by the same cause. There is no absolute remedy of which we are aware for this disease. It will make its attack also on apple and quince trees, but not so virulently as upon the pear tree.

Black Knot—This dangerous malady is peculiarly an affection of cherry trees and plum trees. It appears in the form of an excrescence or swelling of irregular character upon the trees and limbs, breaking out in the early summer and continuing to increase until about the first of August. If not removed it will increase in strength from year to year until the tree is poisoned to death; and it is contagious also, spreading from one tree to another in the same orchard.

Mice—Mice frequently destroy trees which are in early growth by girdling them. As winter approaches they locate their nesting place in the grass standing about the trees, and unless protection is afforded there is danger that the young orchard will be entirely ruined. One way to guard against this is piling about the trees before the snow flies, a foot or a foot and a half in depth of manure, packing it snugly, and keeping straw out of it, otherwise the mice will make their homes in the straw. Another method is to tramp the snow firmly about the trees, which if attended to thoroughly enough will be quite as effective a protection as the manure packing; but if the manure is used, then the work will be done effectually once for all.

Cattle and Sheep—These will injure trees if they are allowed the run of the orchard. Cattle should be excluded under all circumstances, as no benefit is derived from giving them access: but sheep will be an advantage by the enrichment which they give the soil, and besides they will dispose of the unripened fruit which falls from the trees, and in this way will be of service by destroying the

insects which had attacked the fruit and caused it to fall. Their running in the orchard may be deprived of any disadvantage by protecting the trunks of the trees with some sort of fence. Some fruit growers use as a protection raw liver, rubbing it upon the trunks. This may do, but anything that will prevent their approach to the trees near enough to gnaw the bark, will surely answer the purpose.

Blight—This affection is perhaps the most disastrous of the diseases which affect fruit trees. It does not confine its destruction to any one particular variety of fruit, but is natural to all which it assaults; especially so, however, with pear trees. In its appearance, it affects the leaves as does leaf blight to which we have referred, making them black and withering them. Its appearance is first made upon branches which are developing fast; then it will extend over the whole tree, the leaves of which will fall before the autumn; nor is blight confined in its effect to the leaves, but it will ruin the branches themselves, and at length the trunk will be destroyed, and thus the whole tree, unless the disease be remedied.

The remedy for blight is not difficult. All the branches which are attacked by the disease should be removed, and the point at which they are severed from the tree should be some distance lower than where there is any manifestation of it. Having been removed, they should be destroyed by fire without delay. This remedy, which is direct and explicit enough, must be undertaken as soon as the disease appears, and it must be continued with determination. Having taken away the parts of the tree which are diseased, if any twigs or branches shall show indications of the poisoning, they should be taken off also, and this trimming and cutting must be continued until the blight is eradicated or the tree itself cut down. Should the blight appear to have affected the whole tree, it will be the better way to cut down the tree at once and burn it. If left to itself, and this heroic treatment is not applied, the whole orchard in which the blighted tree grows will be ultimately destroyed.

Almost all the affections of either of the kinds which we have referred to can be avoided by the careful fruit grower paying attention to his orchard, looking after it, and attending to the necessities of his plants and shrubs before there shall be any indication of ill-health; or if trees be attacked unaware, then whether the disease be inherent in the tree, or something that has come upon it in the form of vermin or insect, prompt and efficient remedies should be at once applied, and the disastrous results, which otherwise will be certain, can be avoided.

VINEYARD CULTURE.

Grapes are grown in most parts of the Northern and Middle States, and to the greatest perfection, for vineyard purposes, in the mild climate of California, where an excellent quality of wine is manufactured on an extensive scale. It is said of the grape in

localities to which it is naturally adapted that "the vine yields a harvest the product of which is almost certain, whereas other crops are not always to be depended upon; that it needs the least labor relatively to the profit received; that it banishes fallows; continuously occupies the whole extent of the country that has a suitable climate; that it is adapted to all kinds of soils, and occupies those that will produce only useless thorns and briers; that it furnishes labor at almost all seasons, to all ages, and for both sexes; that it yields several important products and valuable merchandises, and; finally, that it requires little manure, allowing this to be applied to other crops.

Soil for Grapes—Grapes will give good results in soils of various composition, but they appears to thrive better where there is a certain admixture of pebbly or gravelly matter.

Situation—A vineyard may be located in a valley, on an elevated plateau, or on a hill side, but narrow vales are little adapted for vine-culture on account of the dampness of the atmosphere preventing the ripening of the grapes, while there is greater exposure to spring frosts. Nor are the crowns of high hills more favorable, as the air being too sharp and constantly in motion, hardens the skin of the grapes. Unsheltered plains produce very good grapes, and inclined plains or hill sides are well adapted. The proximity of lakes seems to exert a favorable influence.

Exposure—Some writers advise a southern exposure exclusively; others prefer the north; while many think it a matter of little moment. It is probable, therefore, that the best exposure must be determined by circumstances—the combined influences of latitude, elevation, the nature of the soil, and the frequency of white frosts in the locality. The vine especially dreads a damp atmosphere, for such injures the quality of its grapes. Therefore, as a general rule, exposures open to the influences of cold and damp winds must be avoided.

Preparation of the Soil—This is a most important part of successful grape-culture. One of the evils most to be feared for a vineyard is a soil containing too much moisture. In such a soil the vine will rot, its life will be short, its produce limited, of inferior quality and ripening slowly. If the soil be of this character, then the first step will be to drain it. Too much importance cannot be attributed to this subject of drainage, not merely as a means of escape for the surplus water of the soil, but also as affording access to the air, which will warm the roots by its direct influence, imparting its own temperature to the earth through which it passes. While alleviating the effect of a drought, by depositing its own moisture on the sides of the passages through which it flows, it also gives off the latent heat by which the water was kept in a state of vapor.

Choice of Vine, Propagation, Etc.—In the choice of plants, the grower must be guided by the experience of others in his

locality, as to the most suitable for the conditions he has to deal with. Climate and surroundings differ so essentially in various parts of the country that no general advice can be given on this subject. Vines may be propagated by cutting, grafting and layering in the manner elsewhere described.

Planting—Vines may be set out from five to six feet apart, and in rows eight feet apart. For the convenient, economical and thorough cultivation by the plough, they may be laid out in quincunxes, which will allow the plough to be used in three different directions. Plants are better laid out in rows north and south, so that they will not shade each other at mid-day, but this, of course in many cases, has to be governed otherwise by the shape of the ground.

Pruning the Vine—The pruning of the vine must have for its object the giving of such shape to the vines as will subject them completely to the action of the sun, facilitate the cultivation of the ground at all times and over all of its surface, and prevent the fruit-bearing wood from being too far removed from the parent stock. An extended experience with the vine has induced some of our best cultivators to adopt fall pruning, which they pursue with very good effect. The cuttings are of greater value, and may either be planted at once, or at least stored in suitable cellars, and kept in better condition than if left upon the vine exposed to the inclemency of the winter. Those who bury their vines to protect them from the frost will find it a great advantage to have them trimmed first. To avoid injury to the last eye in the canes, care should be taken to leave an inch or more of the internode beyond the outer bud. This is a good rule in all winter pruning. Wood must never be cut when frozen. Most vine-dressers practice trimming in any mild weather during the winter, whether in February or March; but if done after the sap has started, or is about to start, the vine will bleed profusely.

Pyramidal Grape Vine Worm—This is a special enemy of the grape, and is named for and distinguished by having a pyramidal hump near the end of its body. It is also found on the raspberry. It is found on the vines in May and descends to the ground in June, where it spins a cocoon, whence after going through the chrysalis state it becomes a moth, with front wings gray; hind wings a lustrous copper color. The worm is a delicate green color marked with pale yellow lines or spots. This worm is easily kept in check by hand picking.

Grape Root Borer—This insect is a moth and not a beetle. It bears a very close resemblance to the common peach borer, both in habit and in the size and general appearance of the grub, but it is a somewhat larger insect and the moths differ materially. It confines itself almost entirely to bark and sap-wood, and the effects of its work are consequently more fatal to the vine. When it is once ascertained that the borers are at work on a vine, they may be des-

royed by clearing away the earth and applying hot water to the roots.

Grape Vine Flea Beetle—This is also known by the name of "Thrips," and "Steel Blue beetle." It varies in color from steel-blue to metallic green and purple. It is found in all parts of the United States and Canada, and generally attacks the grape leaf on the upper surface, which they riddle and destroy. The best remedy is to destroy the grubs by an application of dry lime with a common sand blower or bellows.

Tree Cricket—This insect, of a delicate greenish, semi-transparent white, deposits her eggs on the cane of grape, blackberry and raspberry. The deposit of eggs may be known by a straight longitudinal, contiguous row of punctures as if made by a pin. This cricket will sever the grapes from the bunches just as they begin to ripen, and often severs a whole bunch or so excoriates the stem that it will not ripen.

The remedy is to crush the cricket wherever you find him, while the vineyardist should make it a business to search in the winter time for all punctured twigs, and by burning them, prevent their increase in the future.

Grape Vine Plume—During the latter part of May and beginning of June, the leaves of the grape-vine may often be seen drawn together by silken threads, and in the retreat thus made will be found a small hairy caterpillar, which feeds on the tender leaves of the vine. Whenever they become numerous, the only remedy is hand-picking.

Grape Vine Fidia—A great foe to the grape-vine is the above insect, which is chestnut brown in color, and densely covered with short white hairs. It resembles the rosebug, but is not the same. It appears in June and has disappeared by the end of July. Its mode of injuring the vine is by cutting straight elongated holes one-eighth inch in diameter in the leaves, riddling the leaves to shreds. Like the plum curculio it will drop to the ground upon the slightest disturbance, and this enables it to be readily kept in check. The most efficient way of doing this is by the aid of chickens, which pick them up greedily as fast as they can be shaken down.

Grape Codling—This may be distinguished from the curculio by its having six scaly legs near the head, eight fleshy legs at the middle, and two at the extremity of the body, and by spinning a fine web by which it lets itself drop whenever handled. Its presence is soon indicated by a reddish brown color on the side of the green grape which it enters. It feeds on the pulp and seeds of the grape, and when matured leaves the grape and forms its cocoon on the leaves of the vine. They should be searched for early in the season on the leaves. The second brood of worms, or those which infest grapes, can easily be espied and destroyed in a healthy vineyard; but where a vineyard is affected with what is designated as the "American Grape-rot," the grapes attacked by the codling are

not so easily distinguished, as they bear a close resemblance to the rotting ones. Care should be taken in gathering the infested grapes, for the worm being very active wiggles away and easily escapes.

The Grape Root Borer—The grubs of this insect in general appearance resemble those of the peach-tree borer, and work in the same way underground, but destroy the roots by gnawing into them, and are sometimes said to be shielded from outward applications by a coating of bark. Little can be done in the way of extirpating these underground borers, when their presence is only indicated by the approaching death of the vine. Still, every vineyardist should make it a rule to search for them wherever they find vines suddenly dying from any cause unknown to them, and upon finding such a borer the vine should at once be cut out and destroyed. The beetle, which may frequently be found during the summer months, should also be ruthlessly sacrificed wherever met with. Do not plant a vineyard on land covered with old oak stumps, nor use oak stakes where those made of cedar can be had conveniently.

Grape Cane Gall Curculio—The canes of the Concord vines are frequently found to have galls on the last year's growth, in the shape of an elongated knot or swelling which is generally situated above or below a joint. This was formed the previous fall while the tender cane was growing, and has almost invariably a longitudinal slit on one side, dividing that side into two cheeks, which have a rosy tint. The gall is caused by a little footless, white cylindrical larva which measures 0.28 of an inch, and has a yellowish head, sparsely covered with minute white bristles. This grub indeed bears a very close general resemblance to that of the potato stalk weevil, and when taken out of its gall immediately curls up. It is of a uniform light yellowish brown without any markings whatever. If these gall-bearing canes are cut off and burned during the winter there need be little fear of this insect's work.

Grape Phylloxera—There are two chief types of this pest, the one *gallæcola*, living in galls on the leaves; the other *radicicola*, on swellings on the roots.

The first may be detected by the galls on the leaves in the early spring, which are fleshy swellings on the under side of the leaves, usually those nearest the ground, about the size of a pea, the normal green being flushed with red where exposed to the sunlight. On opening the gall, the mother louse may be found at work. They are enormously prolific. As summer advances, they frequently become prodigiously multiplied, completely covering the leaves with their galls, and settling on the tendrils, leaf-stalks and tender branches, where they also form knots and rounded excrescences. In such a case, the vine loses its leaf prematurely. Usually, however, the natural enemies of the louse seriously reduce its numbers by the time the vine ceases its growth in the fall, and the few remaining lice, finding no more succulent and suitable leaves, seek the

roots. Thus, by the end of September, the galls are mostly deserted, and those which are left are almost always infested with mildew, and eventually turn brown and decay. On the roots, the young lice attach themselves singly or in little groups, and thus hibernate.

The *radicicola* or root-inhabiting phylloxera, present themselves in two forms. One exists in the creases, sutures, and depressions which the knots of the roots afford. The other form are winged. At first, and for some time after the moult, the color of the body of the new-fledged phylloxera is of a uniform bright, deep yellow, with the wings white and rather opaque, and the eyes brown. The dark thoracic band and more diaphanous and smoky nature of the wings are gradually acquired in the course of a day. The wings when highly magnified are seen to be thickly covered with minute hooks. These winged insects are most abundant in August and September, but may be found as early as the first of July, and until the vines cease growing in the fall.

REMEDIES—The leaf-lice may be controlled with sufficient ease by a little care in destroying the first galls which appear, and in pruning and destroying the terminal growth of the infested vines later in the season. The root-lice are not so easily eradicated, and no remedy has yet been discovered—even in France, after experimenting under the stimulus of large national reward—which gives entire satisfaction or is applicable to all conditions of soil.

Submersion, when practicable, and when it is total and sufficiently prolonged, is a perfect remedy. The best season to submerge is in autumn (September and October), when the lice are yet active and the vines have ceased growing. Submergence for twenty-five to thirty days, at this season, will generally rout the lice. A submergence of forty to fifty days, in winter, is required. A vineyard should never be inundated for a longer period than two days in summer, or during growth; and though these brief inundations at that season affect only a few lice near the surface, they are important auxiliaries to the more thorough fall or winter submersion, as they destroy the few lice which are always invading a vineyard in infested districts. These summer inundations will be necessary only after the winged insects begin to appear; and three or four, each lasting less than two days, made between the middle of July and the fall of the leaf, will effect the end desired.

On the best hilly vine land, thorough submersion is impracticable; but on our bottom lands some of the grapes which fail now may be made to succeed by its means.

Carbolic acid, added to water at the rate of about one per cent., applied by pouring into deep holes made by a crowbar or auger, has given satisfactory results; and a thorough application of soot has also been strongly advocated by those who have tried it. A thorough mixing with the soil of a cheap carbolic powder, has given good results.

REMEDIES FOR LA GRIPPE.

Dr. L. E. Keeley says that asafoetida will completely cure the worst cases of la grippe, not only in its primary form, but will break up many of the complications arising from it. It is as absolute a cure for this disease as quinine is for chills and fever.

It is administered in the following manner:

Take a four grain pill every three hours until four pills have been taken. Repeat this treatment for four or five consecutive days, unless a cure is effected sooner.

Asafoetida is becoming a popular remedy for this disease among the farmers in the rural districts. For a dose they usually take a pill three times a day, the size of a grain of wheat.

Sugar coated asafoetida pills can now be had at all drug stores.

2. Take three grains of quinine every hour for three consecutive hours, then take a sponge bath with a large quantity of mustard added. Follow this with a dose of from two to three tablespoonfuls of the very best brandy that can be obtained, then retire. On the following day, if not cured, repeat this treatment. Those accustomed to the use of spirituous drinks may take double this amount of brandy.

I have been almost uniformly successful in the cure of la grippe with this treatment—B. C. STEWART, M. D.

3. Phenacetine has been successfully used in the treatment of la grippe. It is given in three grain doses every three hours until the pain and fever materially subsides; after that give three times a day.

4. Dr. George Fox's treatment for la grippe. At the early stage of the disease I give: Fluid extract of aconite, six drops; fluid extract of gelseminum, thirty drops; water, four tablespoonfuls. Mix.

Of this give one teaspoonful every two hours alternately with the following: Fluid extract of bryonia, thirty drops; black cohosh, thirty drops; water, four tablespoonfuls. Mix.

Dose: One teaspoonful alternately with the above until the fever abates, which it usually does in about six to twelve hours. Then I give Quinine-Beef-Wine and Iron in teaspoonful doses three times a day until health is restored.

This preparation can usually be found already prepared in almost all drug-stores. I have not lost a case with this treatment. I employ with it the following *accessory treatment*.

This disease is of a nervous character. The patient and the sick-room should be kept very quiet. Administer a hot salt bath and repeat every three days until the patient begins to recover. Commence the bath by placing the face downward and apply to the back of the head, neck and spine, cloths wrung out of the water as hot as can be born. When the bathing is completed, care should be taken to remove from the bed all clothing that is wet or damp.

Give frequent foot baths with mustard added. During convalescence the patient should remain indoors, avoiding atmospheric changes, as there is great tendency to relapse. The diet should be of the most nourishing character. Avoid over-eating.

5. A strong tea of mountain sage, drunk freely three times a day, has been employed very successfully in the cure of this disease.

NEW REMEDY. Red Pepper has lately proven to be a panacea for la grippe. It is to be used as follows: Take a red-pepper pod (or a teaspoonful of ground cayenne pepper), pour over this one-half pint of boiling water and let steep like tea. Pour off the liquid into a bottle. Dose: A tablespoonful of the liquid in a cup of hot water; sip slowly. Some can take it much stronger than others. To be taken before each meal and on retiring at night. In severe cases take every three hours.

Latin.	MALARIAL DISEASES.	English.	
Take		Take	
Saccharium	4 drachms	Sugar	1 tablespoonful
Aqua	1 ounce	Water	2 "
Citrus Limonum	$\frac{1}{2}$ ounce	Lemon juice	2 "
Take at one dose and repeat three times daily.		Take at a dose and repeat three times daily.	

Latin.	SALIVATION.	English.	
Take		Take	
Alumin	1 drachm	Alum	1 teaspoonful
Spiritis	2 "	Brandy	4 tablespoonfuls
Aqua	1 gill	Water	1 teaspoonful
Gargle every four hours.		Use as a gargle every four hours.	

Latin.		PILES.		English.
Take			Take	
Oleum lini crudus	4 drachms		Raw linseed oil	1 tablespoonful
Plumbum cerissa	3 "		White lead	3 teaspoonfuls
Met.—Apply to the	parts twice a		Mix thoroughly and apply to the	
day.			parts twice daily.	

Latin.	BRONCHITIS.		English.
Take		Take	
Syrup simplicis	1½ ounces	Simple syrup	3 tablespoonfuls
Succus caspa	1 “	Onion juice	2 “
Dose, one teaspoonful before meals.		Dose, one teaspoonful before meals.	

Latin.	CROUP.	English.
Take	Take	
Succus caspa	Onion juice	
1 drachm	1 teaspoon	
every 25 minutes until relieved.	every 25 minutes until relieved.	

Latin.	BURNS.	English.	
Take		Take	
Calx aqua	1 ounce	Lime water	2 tablespoonfuls
Oleum lini	1 "	Linseed oil	2 "
Apply frequently.		Apply frequently.	

Latin.	ERYSIPELAS.		English.
Take		Take	
Bicarbonate of soda	2 ounces	Baking soda	4 tablespoonfuls
Aqua pura	2 "	Pure water	4 "
Apply with a wet cloth.		Apply with a cloth.	

Latin.		SPRAINS.		English.
Take			Take	
Chloride of sodium	1 ounce		Table salt	2 tablespoonfuls
Aqua	2 "		Water	4 "
Apply freely with cotton cloth.			Apply with a cotton cloth.	

Latin.	DYSPEPSIA.	English.
Take		Take
Sinapis alba	1 drachm	White mustard seed 1 teaspoonful
Take at a dose three times a day.		Take three times a day.

PROFESSIONAL REMEDIES.

Latin.		CHOLERA MORBUS.	English	
Take		Take	Take	
Acetic Acid	16 drachms.	Vinegar	$\frac{1}{2}$ glassful.	
Piper Nigræ	4 "	Black Pepper	1 tablespoonful.	
Chloride of Sodium	3 "	Table Salt	1 "	
Aqua pura	16 "	Water	$\frac{1}{2}$ glassful.	
Dose 1 tablespoonful every hour.		Dose, 1 tablespoonful every hour.		
Latin.		GRAVEL.	English.	
Take		Take	Take	
Sodii Boras	1 ounce.	Borax	1 tablespoonfuls	
Potasii Bitartaris	4 drachms.	Cream Tartar	2 "	
Aqua pura	1 pint.	Water	1 pint.	
Dose 2 tablespoonfuls every 4 hours.		Dose, 2 tablespoonfuls every 4 hours.		
Latin.		DIABETES.	English.	
Take		Take	Take	
Pulvis Cretæ	$\frac{1}{2}$ ounce.	Pulverized chalk	1 teaspoonful.	
Dose 1 teaspoonful in a glass of milk three times daily.		To be taken in a glass of milk three times a day.		
Latin.		EARACHE.	English.	
Take		Take	Take	
Pulvis, Piper Nigræ	$\frac{1}{4}$ drachm.	Pulverized black pepper	$\frac{1}{4}$ teasp ^{ful} .	
Oleum Olivæ	$\frac{1}{4}$ "	Sweet Oil	$\frac{1}{4}$ "	
Wrap the former in lock of cotton, moisten with the latter and insert in the ear.		Wrap in lock of cotton, moisten with sweet oil and insert in ear.		
Latin.		SUMMER COMPLAINT.	English.	
Take		Take	Take	
Aqua Calcis	1 gill.	Lime water	1 teacupful.	
Dose, 1 teaspoonful 3 times a day.		Dose, 1 teaspoonful three times a day. Directions for making lime water see page 447. Vol. I		
Latin.		SCIATIC RHEUMATISM.	English.	
Take		Take	Take	
Spiritus Terbinthinum	2 drachms.	Spirits of turpentine	2 teasp ^{ful} s	
Dose, $\frac{1}{2}$ teaspoonful twice a day.		Dose, $\frac{1}{2}$ teaspoonful twice a day.		
Latin.		MALARIAL DISEASES.	English.	
Take		Take	Take	
Citrus Limonum	4 ounces.	Lemon juice	1 teacupful.	
Aqua pura	8 "	Water	$\frac{1}{4}$ pint.	
Dose, 1 tablespoonful three times a day.		Dose, 1 tablespoonful three times a day.		
Latin.		CHILLS AND FEVER.	English.	
Take		Take	Take	
Eupatorium Perfoliatum Infusum.		Boneset tea.		
Dose, $\frac{1}{2}$ teacupful before meals.		Dose, half teacupful before meals.		
Latin.		WORMS.	English.	
Take		Take	Take	
Chenopodium Anthelminticum.		Worm seed, pulverized	$\frac{1}{2}$ ounce.	
Pulv.	4 drachms.	Dose, 1 teaspoonful before each meal.—Dr. E. H. Ruddock.		
Dose, 1 teapoonful before meals.				

From the foregoing it is readily seen that the original cost of many prescriptions is comparatively nothing, and that we often think we are getting something wonderful, when in fact it is only something wonderfully simple.

PROFESSIONAL REMEDIES

For all diseases, from noted physicians, giving the name and address of each physician.

To meet a desire expressed by some interested in the system of medical treatment embodied in this book, we append herewith a selection of the most approved professional remedies for various diseases, comprising the favorite prescriptions of the leading physicians of this country and Europe, by J. R. DEGRASSI, M. D.

Apoplexy.

If able to swallow, take—

Calomel.....6 grains.

Jalap.....10 grains.

Mix—Take at a dose—followed if necessary with a full dose of castor oil.

If unable to swallow, a drop of croton oil on the back of the tongue every hour or two until it operates.

Ordinarily, cold should be applied to the head—ice-cold water, in bags or bladders.

But if the surface is cool, face pale, pulse feeble, etc., this is contra-indicated; hot mustard water foot baths and friction on these extremities equalizes the circulation somewhat. *Dr. G. B. Wood, Philadelphia.*

Abscesses.

To prevent, take—

Boracic acid.....20 grains.

Benzoic acid.....5 grains.

Vaseline..... $\frac{1}{2}$ ounce.

Mix—Apply as an ointment three times a day. *Dr. Bladtner, Berlin.*

To prevent, apply

Cantharida emplastrum—Apply—covering the inflamed surface—remaining until it blisters.

Asthma.

Take—

Tincture Lobelia.....1 ounce.

Tincture Hyoscyamii.....1 “

Spiritus Aetheria Nitrosi.....1 “

Syrupus solutani.....1 “

Mix—Take a teaspoonful in water every half hour during the paroxysm until the difficulty of breathing is relieved; then every two or three hours, in

addition, rub on the chest several times a day—

Chloroform..... $\frac{1}{2}$ ounce.

Oil Turpentine.....1 “

Spirits Rosemary..... $1\frac{1}{2}$ “

Mix.

Dr. F. M. DeCosta, Philadelphia.

Biliousness.

Take—

Calomel.....2 grains.

Extract Colocynth.....3 “

Sulphate Quinine.....5 “

Mix—a dose.—Take at night—follow in the morning with, citrate of magnesia or compound licorice powder. *Dr. J. Rhodes Wilkins, Chicago.*

Take—

2—Compound Cathartic Pills—U. S. P. and salicin 8 grains, at night; a gentle cathartic, in the morning if necessary. *Dr. La Marcy, New Orleans.*

Bilious Colic.

Take—

Carbolic acid dilute.....2 drachms.

Chloroform.....2 drachms.

Water of Peppermint.....2 ounces.

Mix—Dose a tablespoonful every half hour until relieved. *Dr. Chas. Murchinson, London.*

Take—

Water of Camphor.....1 ounce.

Spirits of Ether compound.....2 drachms.

Tincture of Cardamon Comp.....4 “

Spirits of Anise.....4 “

Water of Peppermint..... $1\frac{1}{2}$ ounces.

Mix—Take a tablespoonful every hour—oftener if indicated—and apply a large poultice of flax seed over the stomach. *Dr. Morrison, London.*

Bright's Disease.

Take—

Potassii Nitrates..... 4 drachms.

Extract Galii Fluid..... 2½ ounces.

“ Uva Ursa Fluid..... 2½ “

“ Ergotae Fluid..... 1 “

Mix—Take a teaspoonful in half a wine glassful of sweetened water three or four times a day. *Dr. N. S. Davis, Chicago.*

Avoid alcoholic stimulants—strong coffee, tea, soups, etc.

Allowed—Fish, sweet breads, sago, rice, tapioca, macaroni, prunes, apples, celery, lettuce, etc., may be used in moderation in connection with an almost strict milk diet.

Bronchitis.

Take—

Acetati Morphine 1 grain.

Acetate of Potassii..... 3 drachms.

Acetate Liquor Ammonia..... 8 ounces.

Syrup Tolu..... 1 ounce.

Mix—Take a dessert spoonful every third hour. *Dr. DeCosta, Philadelphia.*

Take—

Ammonia Muriat } of each 5 to 10 gr.
Potassai Chlorat }

Mix—A dose every two hours for an adult. *Dr. Loomis, New York.*

Burns and Scalds.

Mix flour into a thin paste in olive oil or vaseline and apply, covering the entire burned surface—excluding the air; or, cover the burned surface with Bicarbonate Sodii—(baking soda), bind with cloth carefully, excluding air. *Dr. H. Hammersly, Erie.*

Cancer.

Take—

Arsenicus Acid..... 2 drachms.

Mucilage Acacia..... 1 “

Mix to a paste, too thick to run, and apply on the diseased surface, if not exceeding an inch in diameter, cover with dry lint to absorb; after two or three days apply bread poultices. The slough then separates—wash clean with castile soap and water, and use simple salve. *London Cancer Hospital.*

To relieve pain in cancer of the breast.

Take—

Plumbi Acetatus..... 15 grains.

Aqua Distillatur..... 1 ounce.

Mix—For local application. *Dr. Gross, Philadelphia.*

Cataleptic Fits.

The treatment is general and tonic. Purging is indicated. The remedies used must be governed entirely by the individual characteristics, to maintain all the organic functions in as near a healthy condition as possible—the cause being first ascertained. If periodical, quinine is required to prevent them; if from Amenorrhea, or other derangement of the generic function, correct it as indicated. Debility must be counteracted by a general tonic, sustaining treatment, aided by the shower bath—sea-bathing, exercise in the open air, and a carefully regulated nutritious diet. *Dr. Wood, Philadelphia.*

Catarrh.

Nasal, first cleanse with—

Carbolic Acid..... 1 grain.

Sodæ Bicarbonate..... } of each 5 gr.

Boracis..... }

Glycerine..... 1 drachm.

Water..... 1 ounce.

Mix—Then apply as a spray with an atomizer twice a day.

Ferric Alum..... 5 grains.

Water..... 1 ounce.

Or apply as above

Sulphate Zinc..... 3 grains.

Tartaric Acid..... 3 grains.

Water..... 1 ounce.

Mix.

*Dr. Loomis, New York.***Cholera.**

Take—

Opium..... 2 grains.

Gum Camphor..... 2 “

Calomel..... 3 to 6 “

Sugar of Milk..... 15 “

Mix—Triturate thoroughly, and administer in a teaspoonful of water; repeat every half hour as long as necessary. *Dr. Palmer, Ann Arbor.*

Take—

Tincture Opium..... 1 ounce.

Tincture Capsicum..... 1 “

Spirits Camphor..... 1 “

Chloroform Pure..... 1½ drachms.

Brandy..... 2 ounces.

Mix—Teaspoonful doses every fifteen minutes until diarrhea is arrested, then increasing the interval between doses. *Dr. J. Rhodes Wilkins, Chicago.*

Cholera Infantum.

Take—

Tincture Opium..... 12 drops.

Mist Crete..... 1½ ounces.

Mix—A teaspoonful every two or

three hours to an infant one year old.
Dr. Lewis Smith, New York.

Take—
Calomel.....2 grains.
Bicarbonate Sodæ.....1 scruple.
Pulverized Zinziberis.....12 grains.
Mix—Divide in twelve portions—
Take one three or four times daily. *Dr. H. Hartshorne, Philadelphia.*

Colic.

Take—
Carbolic Acid } of each, 1 to 3 drachms.
Chloroform }
Water of Peppermint.....1 to 3 ounces.
Mix—Dose a tablespoonful, repeat in half an hour if necessary. *Dr. C. Murchison, London.*

Flatulent Colic.

Take—
Water of Camphor.....1 ounce.
Spirits of Ether Compound 2 “
Tincture of Cardamom “ 4 drachms.
Spirits of Anise.....6 “
Water of Peppermint.....1½ ounces
Mix—Making six doses; take one as often as necessity requires. *Dr. Von Hoffer, Amsterdam.*

Congestive Chills.

Take—
Tincture Opium.....20 drops.
Chloroform.....½ drachm.
Mix—Repeat in half an hour if necessary.
Or—
Morphine Sulphate.....½ grain.
Atropiæ.....½ “
Mix—To be injected subcutaneously.
These remedies may be used at any stage of the chill without fear of prejudicing the subsequent career of the case.

Consumption (Phthisis-Pulmonalis) Chronic.

Take—
Iodide of Potassium.....4 drachms.
Syrup Tolu.....3 ounces.
“ Ipecac.....1 “
Extract Verat Verid Fluid.....1 drachm.
Morphine Sulph.....2½ grains.
Mix—Teaspoonful three to four times daily. *Dr. A. B. Palmer, Ann Arbor.*
For cough, take—
Morphine Acetat.....2 grains.
Potassii Cyanidi.....1 “
Acidi Acetici.....1 drachm.
Extract Pruni Virg. Fluidum 2 ounces.
Mist Acacia.....2 “
Mix—A teaspoonful four to six times daily. *Dr. J. M. DeCosta, Philadelphia.*

Constipation.

Take—
Sulphate Magnesia.....1 drachm.
“ Quinine.....1 grain.
Mix—To be taken in a tumbler of warm water every morning. *Dr. Wm. Thompson, New York.*
Take—
Extract Cascara Sagrada Fluidum, 1 oz.
“ Nux Vomica “ 1 scr.
“ Glycerine add.....2 oz.
Mix—Take a teaspoonful in the morning, fasting; in a glass of warm water. *Dr. Hamilton, Springfield.*

Croup.

Membranous, early stage, take—
Syrup of Ipecac 5 to 10 drops every 5 minutes until vomiting occurs. *Dr. Mentor, New York.*
Take—
Sulphate of Quinine.....30 grains.
Carbonate of Ammonia.....30 grains.
Syrup Senega.....1 ounce.
Syrup Acacia.....1 “
Mix—Shake well, give a teaspoonful every fourth hour. *Dr. Fordyce Barker, New York.*

Diabetes.

Take—
Tannic Acid.....5 grains.
Opium Pulverized.....½ “
Mix—To be taken thrice daily between meals, and
Tincture Ergotæ 1 drachm, in water before each meal.
Externally, take—
Veratria.....1 drachm.
Cetacii Unguent.....1 ounce.
Mix—Rub a piece the size of a cherry thoroughly in along the spine, morning and evening. *Dr. S. Gross, Philadelphia.*

Diarrhea.

Take—
Acidi Sulphurici Aromatica 2½ drachms.
Tincture Opium.....2½ “
Syrup Simplicis.....4 “
Water.....2 ounces.
Mix—A teaspoonful in a little sweetened water two to four times a day.
Or take—
Tincture Catechu.....4 drachms.
“ Opii Deodorized 3 “
Bismuth Sub-Nit.....4 “
Aqua Cinnamomi ad.....4 ounces.
Mix—Take a teaspoonful every three to four hours until checked. *Dr. Gusswood, Texas*

Take—

Tincture Opium.....10 minims.
Ipecac Pulv..... 2 grains.
Sodæ Bicarbonate20 “
Syrupii..... 4 drachms.
Aque ad..... 1½ ounces
Mix—A teaspoonful every hour. *Dr.*

King Chambers, Utica.

Diphtheria.

Take—

Tincture Terri Chloridi, 1 drachm.
Potassa Chlorat..... 2 drachms.
Acidi Hydrochloric Di-
lute..... 20 minims.
Tincture Capsicum..... 1 drachm.
Muriate Morphine.....½ grain.
Syrup Limonis.....22 drachms.

Mix—Give a teaspoonful every two to three hours, as required. *Dr. D. L. Miller, Chicago.*

In indication of exhaustion,

Ammonia Carb..... 8 grains.
Tinct. Cindionia Comp, 2 drachms.
Syrupi Aurantii..... 3 drachms.
Aqua, ad 4 ounces.

Mix—Dessert to tablespoonful every four hours for a child four or five years old.

—*Dr. W. H. Day, London.*

For local application take—

Chlorate Potassi..... 1 drachm.
Boracis..... 1 drachm.
Glycerine.....½ ounce.
Mellis.....½ ounce.

Mix—the throat to be mopped out with a little of this solution frequently during the day. *Dr. W. H. Day, London.*

Local treatment—

Glycerine..... 1 ounce.
Acidi Thymic..... 6 to 10 grains.
Sodii Borat..... 4 drachms.
Aqua Camphor..... 4 ounces.
Picis Liquid..... 5 ounces.

Mix—Atomize freely every 2 to 3 hours. *Dr. Jas. Warren, Boston.*

Antiseptic Gargle—

Chlorine Water Dil... 3 ounces.
Alcohol..... 1 drachm.
Mix. Gargle often as required, or
Carbolic acid..... 2 grains.
Aqua..... 1 ounce.

Mix—Gargle—often as required.—
Dr. S. B. Palmer, Ann Arbor.

Dropsy.

Pulverized Scillæ.....1½ grains.
“ Digitalis.....½ grain.
Blue Mass..... 2 grains.

Mix. Make one pill. Take three times a day. *Dr. J. Rhodes Wilkins, Chicago.*

Or take—

Sulphate Quinia.....12 grains.
Terri Lactatis.....12 grains.
Extract Digitalis..... 8 grains.

Mix. Make six pills. Take one every hour. *Dr. Greenville, Dowell Texas.*

Dysentery.

Take—

Pulverized Opium.....1½ grains.
Nitrate Potassii..... 5 grains.
Calomel..... 1 grain.

Mix—To be taken every two hours until pains and tenesmus are relieved and patient inclined to sleep. *Dr. N. S. Davis, Chicago.*

Or take—

Pulverized Catechu.....2 drachms.
“ Acacia.....½ ounce.

Water..... 6 ounces.

Mix. Give a tablespoonful every two hours.

Dyspepsia.

Take—

Sub-carbonate Bismuth.....3 drachms.
Sulphate Morphia..... 1 grain.
Pulverized Aromatica..... 1 drachm.

Mix. Divide into twelve portions. Take one in milk before each meal. *Dr. Robert Bartholow, Philadelphia.*

If the bowels are irritable, take—

Sub-nitrate Bismuth.....5 drachms.
Muriate Morphine... ¼ grain.

Mix. Divide into twenty portions.—
Take one after meals. *Dr. Palmer, Ann Arbor.*

Or take—

Pepsin..... 3 drachms.
Acidi Muriati, Dil..... 1 drachm.
Strychnia..... 1 grain.
Glycerin..... 2 ounces.

Tincture Cinchoni Com-
pound ad..... 6 ounces.

Mix. Dose — a teaspoonful after meals.

Earache.

Apply heat and moisture until relieved.

In addition, saturate a small bit of absorbent cotton with—

Sweet oil 1 drachm.
Tinct. Opii..... 10 drops.

Mix well and fill the ear cavity—
cleanse thoroughly with warm water twice a day, then renew. *Dr. Swan-
nell, Dublin.*

Eczema.

Take—

Bi-carbonate Potass.....30 grains.
Water Dist..... 1 pint.

Mix. Use as a wash twice a day.—
Dr. R. Farquharson, London.

Or take—

Syrup Tolu..... $\frac{1}{2}$ ounce.
Vini Terri..... $\frac{1}{2}$ ounce.
Liquor Arsenicalis.....12 drops.
Aque Anethi.....1 ounce.
Mix. A teaspoonful after meals for
a child two years old.

Enlargement of the Heart (Hypertrophy).

Take—

Acetate of Lead..... $\frac{1}{2}$ drachm.
Pulv. Opium.....5 grains.
Confectio Rosarum.....qs.
Mix. Make twenty pills. Take one
three times a day. *Dr. Hartshorne,*
Philadelphia.

Enlarged Spleen (Ague Cake.)

Take—

Sulphate Quinine.....1 drachm.
Ferri Sulph Exsic..... $1\frac{1}{2}$ drachms.
Mix. Make thirty pills. Take four
or five during the day.
Or take—
Pil Terri Carbonat.....1 drachm.
Acidi Arseniosi.....1 grain.
Sulph. Quinine.....2 scruples.
Mix. Make forty pills. Take two
pills three times a day. *Dr. R. Barth-*
olow, Philadelphia.

Epileptic Fits.

Take—

Potassii Bromidi.....25 grains.
Tincture Belladonnae.....5 minims.
Aqua ad.....1 drachm.
Mix. To be taken three times daily.
N. Y. Insane Asylum.

Or take—

Tincture Digitalis.....20 to 40 minims.
Potassii Bromidi.....2 scruples.
Syrup Aurantii.....3 drachms.
Aqua ad.....4 ounces.
Mix. A tablespoonful three times a
day for children six to twelve years of
age.

Erysipelas.

Take—

Argenti Nitrat.....1 scruple.
Acid Nitrici Dilute.....10 drops.
Aqua.....1 ounce.
Mix. Paint this daily over the affected
parts, at the same time giving internally—
Acid Nitrici Dilute.....1 drachm.
Syrup Zinziberis..... $\frac{1}{2}$ ounce.
Aqua..... $5\frac{1}{2}$ ounces.
Mix. A tablespoonful every four
hours. *Dr. Wm. A. Netley, Boston.*

Felon.

To prevent—

Apply a high degree of heat and
moisture. Cover the entire affected
surface with a plaster of cantharides,
which, if applied early and it draws a
full blister, will arrest the further de-
velopment.

Fever and Ague.

Take—

Quinine Sulphate.....10 grains.
Capsicum, Pulv.....3 grains.
Opium.....1 grain.
Mix—A dose to be administered
three or four hours before the chill is
expected. *Dr. Alonzo Clark, New*
York.

Or take—

Quinine Sulph.....20 grains.
Ipecac, Pulv.....5 grains.
Calomel.....2 grains.
Piperin.....4 grains.
Mix—Divide into five parts—to be
taken every three hours during the in-
termission. *Dr. J. Rhodes, Wilkins,*
Chicago.

Fits (Infantile Convulsions.)

Take—

Potassii Bromidi.....2 to 6 grains.
Aqua.....1 drachm.
Mix. To be given every 15 to 20
minutes.

In addition, take—

Chloral Hydrat.....5 grains.
Aqua..... $1\frac{1}{4}$ ounces.
Mix. Inject per rectum every ten to
twenty minutes. *Dr. L. Smith, New*
York.

First give a purgative dose of calo-
mel—followed by—

Chloral Hydrat.....4 grains.
Potassii Bromidi.....8 grains.
Aqua.....1 drachm.
Syrup.....1 drachm.
Mix. Dose for a child two years old.
Dr. A Jacobi, New York.

Gout.

Take—

Ipecac Pulv.....1 grain.
Extract Colchicum Acetalis.....1 grain.
Calomel.....1 grain.
Extract Aloes.....1 grain.
Extract Nucis Vomica..... $\frac{1}{4}$ grain.
Mix for a dose. One every three
hours until the specific purgative action
is obtained. *Dr. A. Loomis, New*
York.

Gonorrhea, Gleet.

Zinci Sulphatis.....	10 grains.
Ferri Sulphatis.....	10 grains.
Cupri Sulphatis.....	10 grains.
Aluminus.....	10 grains.
Aqua.....	8 ounces.

Mix. Use as an injection at first, diluted with three times its bulk in water, gradually increasing until its full strength is used or the discharge ceases, after which it should be gradually decreased in strength. *Dr. Birkley Hill, London.*

Copaibæ.....2 drachms.

Cubebæ.....½ ounce.

Cera Alba, qs.

Mix. Make 120 pills. Take ten pills three times a day. *Dr. Howard Johnston, N. Y.*

Hay Fever (Hay Asthma.)

Take—

Bromide.....½ drachm.

Alcoholis.....4 ounces.

Mix. A small quantity placed in a wide mouth vial and vaporized by the warmth of the hand—the vapor should be snuffed into the nose—repeat as indicated. *Dr. R. Bartholow, Philadelphia.*

Take—

Potassæ Bromidi.....6 drachms.

Extract Grindelia Robusta. 2 ounces.

“ Eucalipti Glob Fl. 2 ounces.

Tincture Stramonii.....4 drachms.

Mix. A teaspoonful every four to six hours in a little sweetened water in addition.

Heart Disease (Angina Pectoris.)

Take—

Liquor Arsenicalis.....5 minims.

Aqua.....1 ounce.

A dose—to be taken three times a day. *Dr. F. E. Austie, London.*

Or take—

Chloroform.....2 drachms.

Spirits Ammonia Aromatica 2 drachms.

“ Ætheris Compositus. ½ ounce.

Tincture Opium, camphorated.....½ ounce.

Mucilage Acacia.....½ ounce.

Mix. A teaspoonful as indicated.—*Dr. H. Hartshorne, Philadelphia.*

Hemorrhage of Lungs.

Take—

Gallic Acid.....20 grains.

Repeat every ten minutes until hemorrhage ceases.

Or take—

Cupri Sulphatis.....½ grain.

Ferri Sulphatis.....2 grains.

Extract Hyoscyamii.....1 grain.

Mix. Make one pill. Take three times a day for persistent slight hemorrhage. *Mr. F. DeCosta, Philadelphia.*

Take—

Plumbi Acetas.....2 scruples.

Pulverized Digitalis.....1 scruple.

“ Opium.....10 grains.

Mix—Make 20 pills. Take one every four hours. *Dr. Robert Bartholow, Philadelphia.*

Hepatitis of the Liver.

Early stage, take—

Tartar Emetic.....¼ to ½ grain.

Take every two to four hours. *Dr.*

Wm. A. Netley, Boston.

Take—

Ammonia Muriatis.....½ ounce.

Hydrarg Chlorid Carros.....1½ grains.

Extract Conii Fluidum.....5 drachms.

Syrup Glycyrrhyza.....4½ ounces.

Mix. A teaspoonful diluted in water four times a day. *Dr. N. S. Davis, Chicago.*

Hypertrophy of the Heart.

Take—

Digitalis Pulv.....¼ grain.

Ferri Sulph.....¼ grain.

Capsici.....¼ grain.

Extract Gentian, qs.

Mix—make one pill—take after each meal. *Dr. W. A. Netley.*

Or take—

Tincture Digitalis .3 minims.

Tincture Hyoscyamii 5 minims.

Syrupi Aurantii.....¼ drachm.

Aqua Camphoræ.....4 drachms.

Mix—For a child 5 years old; give every 6 hours. *Dr. E. Ellis, New Zealand.*

Or—

Extract Ergotæ Fluidum.....3½ ounces.

Tincture Digitalis.....¼ ounce.

Mix—Take 20 drops 3 times a day.

Incontinence of Urine (Enuresis.)

Take—

Extract Rhus. Arom. Fluid. 1½ ounces.

Extract Ergotæ Fluid.....1 ounce.

Tincture Nux Vomica.....4 drachms.

Elixir Simplic.....2 ounces.

Mix—Take ten to fifteen drops three times daily in sweetened water—child five years old. *Dr. N. S. Davis, Chicago.*

Or take—

Strychnia.....1 grain.
 Cantharides Pulv.....2 grains.
 Morphia Sulph.....1½ grains.
 Ferri Pulv.....1 scruple.

Mix—Make 40 pills; give one three times a day—child ten years old. To which add a cold shower bath—careful diet—scant but cooling drink, lying on the side—pure air, wholesome exercise—regular habits. *Dr. S. D. Gross, Philadelphia.*

Inflammation of the Bowels (Acute Enteritis).

Take—

Subnitrate Bismuth.....1 drachm.
 Lactopeptin.....½ drachm.
 Pulv Cretae Compound 1 scruple.
 Pulv. Opium.....10 grains.

Mix—Divide into ten portions. Take one three times a day.

Or take—

Pulv. Opium.....1 grain.
 Pulv. Ipecac.....1 to 3 grains.
 Pulv. Calomel.....1 grain.

Mix—For a dose—take every three hours, and in addition, take—

Liquor Ammonia Acetatus...1 ounce.
 Spirits Etheris Nitrosi.....1 ounce.

Mix—Take a teaspoonful in a little water between each of the powders. *Dr. N. S. Davis, Chicago.*

Inflammation of the Bladder (Ceptitis.)

Copaibæ.....1 ounce.
 Morphia Sulphas.....2 grains.
 Pulv. Acaciæ.....2 drachms.
 Sacch. Alba.....2 drachms.
 Olei Gaultheriæ...10 drops.
 Aqua.....6 ounces.

Mix—Take a teaspoonful to a dessert-spoonful three or four times daily. *Dr. S. D. Gross, Philadelphia.*

Or take—

Extract Hyoscyamii Fluidum 1 drachm.
 Extract Hydrastes Fluidum 1 drachm.
 Lithiated Hydrangia (Lambert's) ad.....6 ounces.

Mix—Take a teaspoonful in linseed tea three or four times each day. *Dr. J. Rhodes Wilkins, Chicago.*

Inflammation of the Eyes (Conjunctivus.)

Simple, take—

Plumbi acetatus.....15 grains.
 Morphia acetat.....½ grain.
 Aqua Dist.....2 ounces.

Mix—Bathe the eye several times during the day.

Or take—

Sulphas Zinci.....12 grains.
 Morphia acetat.....½ grain.
 Aqua Dist.....2 ounces.

Mix—and bathe the eye frequently. Keep the inflamed parts free from exposure to wind, light, cold or heat, give a cooling purgative at night.

Inflammation of the Bladder (Acute Nephritis.)

Take—

Infusion Digitalis.....1½ ounces.
 Spiritus Aetheris Nitrosi 6 drachms.
 Syrup Simplicis.....½ ounce.
 Aqua Dist.....6 ounces.

Mix—Dose, a tablespoonful three times a day. *Dr. J. Rhodes Wilkins, Chicago.*

Chronic, take—

Tinct. Ferri Perchloridi...2 drachms.
 Spiritus Aetheris Nitrosi...4 drachms.
 Infusion Quassia ad.....6 ounces.

Mix—A tablespoonful three times a day. *Dr. G. Stewart, Edinboro.*

Inflammation of the Stomach (Acute Gastritis.)

If the stomach is overloaded give as an emetic—

Ipecac.....20 grains
 Antimony Tartrat...1 grain.

Mix—Produce free vomiting with an abundance of warm water. *Dr. Wm. A. Nottley.*

Or take—

Tannin.....10 grains.
 Aqua Dist.....3 ounces.

Mix—Give a teaspoonful every two hours when there is great purging but no vomiting.

Chronic, take—

Extract Hyoscyamii...1 grain.
 Opium Pulv.....½ grain.
 Argentum Nitrat...½ grain.

Mix—Make pill; take one four times daily. *Dr. N. S. Davis, Chicago.*

Inflammation of the Womb (Urethritis.)

Chronic, take—

Magnesia Sulphatis...2 ounces.
 Ferri Sulphatis.....16 grains.
 Acidi Sulp. Dilut...1 drachm.
 Aqua.....1 pint.

* Mix—Two tablespoonfuls in a tumbler of iced water daily on rising.

Or take—

Sodii et Potas. Tart.....2 ounces.
 Vini Ferri Amiri.....2 ounces.
 Acid Tartarici.....3 drachms.
 Aqua.....14 ounces.

Mix—Two tablespoonfuls as above.
Reliance should be on the observance of proper hygiene, pure air and perfect rest. *Dr. Thomas, New York.*

Irritable Bladder.

Take—

Potassia Bicarbonate.....1 ounce.
Tincture Hyoscyamii Fluidum 4 drachm.
Extract Hydrastis Fluidum...1 drachm.
Infusion Flax Seed ad.....6 ounces.

Mix—Take a teaspoonful after meals and at bed time. *Dr. Holman, Savannah.*

Jaundice.

Take—

Calomel.....3 grains.
Opium Pulv.....2 grains.
Bismuth Sub. Nit.....2½ scruples.

Mix—Divide in six portions, take one every three hours. *Dr. Wm. Pepper, Philadelphia.*

If malarial, take—

Quiniae Sulph.....2 scruples.
Ferri Sulp. Exsic.....1 scruple.
Acidi Arseniosi.....1 grain.

Mix—Make twenty pills; take one three times a day. *Dr. R. Bartholow, Philadelphia.*

Leucorrhœa.

Take tincture Ferri Chloridi; dose, 25 drops in water three times a day.

In addition—

Keep the bowels free with Magnesia Calcined, ½ drachm every alternate night.

Also—

Use warm water freely as a vaginal injection through a fountain syringe twice a week. *Dr. I. Rhodes Wilkins Chicago.*

Or take—

Ferri Subcarbonas....5 grains.
Magnesia Calcined....15 grains.
Hydrarg Cum. Creta...10 grains.

Mix—A dose, once or twice a day. *Dr. J. Rhodes Wilkins, Chicago.*

Menstruation, Suppressed (Amenorrhœa.)

With Anæmia, take—

Arsenic.....1 grain.
Ferri Sulp. Exsic.....½ drachm.
Pulv. Pip. Nig.....1 drachm.
Fil. Aloes et Myrrh...1 drachm.

Mix—Make forty pills; take one pill twice daily after meals. *Dr. I. M. Fothergill, London.*

Or take—

Tincture Sanguinaria 2 drachms.
Tincture Aloes.....½ ounce.
Tinct. Nucis Vomicia 2 drachms.

Mix—Take twenty drops two or three times daily. *Dr. R. Bartholow, Philadelphia.*

Menstruation, Delayed (Chlorosis.)

Take—

Hydrarg Chlorid Carros...1 to 2 grains.
Liquor Arsenici Chlorid...1 drachm.
Tincture Ferri Chlorid....4 drachms.
Acid Hydrochlo Diluti....4 drachms.
Syrupi.....3 ounces.
Aqua.....6 ounces.

Mix—Take one dessertspoonful in a wineglassful of water after each meal.

Or take—

Ferri Muriatis Tincturae...1 ounce.
Hydrastis Extract Fluidum 2 drachms.
Doveri Syrup.....1 ounce.

Mix—Shake well, dose, a small teaspoonful in water three or four times a day. *Dr. J. Rhodes Wilkins, Chicago.*

Menstruation, Excessive (Menorrhagia.)

Take—

Acidi Gallici.....½ drachm.
Acidi Sulphurici Dil....1 drachm.
Tinct. Opii Deodorat....1 drachm.
Infus. Rosae Comp.....4 ounces.

Mix—Take a tablespoonful every four hours or oftener.

Or take—

Fluid Extract Ipecac....2 drachms.
Fluid Extract Ergot....4 drachms.
Fluid Extract Digitalis...2 drachms.

Mix—Take thirty drops to a teaspoonful every two to four hours. *Dr. R. Bartholow, Philadelphia.*

Menstruation, Painful (Dysmenorrhœa.)

Take—

Fluid Extract Ergotæ....7 drachms.
Tincture Gelsem Comp....1 drachm.
Tincture Aconite Rad....16 drops.

Mix—A teaspoonful every two to four hours in congestive. *Dr. R. Bartholow, Philadelphia.*

Chloral Hydrat.....1 drachm.
Spirits Etheris.....2 drachms.
Liquor Opii. Sedativi...½ drachm.
Tincture Hyoscyamii....3 drachms.
Spirit Chloroformi....2 drachms.
Aqua ad.....6 ounces.

Mix—A tablespoonful every two hours.

Miliary Fever.

Take—

Tartarici Acidi.....1 drachm.
Doveri Syrup.....1 drachm.

Mix—Dose a teaspoonful every three or five hours. Drink cold lemonade

If costive, take a seidlitz powder.

Milk Leg (Phlegmasia Dolens.)

Take—

Tinc. Saponis Comp. . . 6 ounces.

Tincture Opii . . . 1½ ounce.

Tincture Aconite Rad ½ ounce.

Extract Belladonnæ. . . ½ ounce.

Mix—As a liniment. Gently rub the surface toward the trunk continuing rubbing fifteen to twenty minutes, every six hours. In the interval keep the leg enveloped in cotton batting covered with oiled silk. *Dr. Fordyce Barker, New York.*

In the outset observe a low diet, and above all continued rest in a horizontal position, the limb slightly elevated. Local depletion relieves the overgorged veins and tissues. At the subsidence of violent symptoms prostration ensues, and a sustaining treatment must be adopted.

Neuralgia.

Take—

Quinine Sulphat. . . 2 drachms.

Morphiæ Sulph. . . 3 grains.

Strychnia . . . 2 grains.

Acidi Arseniosi. . . 3 grains.

Extract Aconite. . . 30 grains.

Mix—Divide and make sixty pills. Take one to four times daily. *Dr. S. D. Gross, Philadelphia.*

Or take—

Chloral Hydrate. . . 1 drachm.

Camphoræ Pulv. . . 1 drachm.

Morphia Sulp. . . 2 grains.

Chloroformi. . . 40 minims.

Mix—Dose, thirty to forty drops on sugar or in a capsule. *Dr. R. Bartholow, Philadelphia.*

Night Sweats.

Take—

Acidi Sulphuricum Aromatica 3 drach.

Tincture Opii . . . 1 drach.

Syrup Simplicis. . . 4 drach.

Aqua Dist. . . 2 ounces.

Mix—Take a teaspoonful in a little sweetened water or lemonade two to four times a day. *Dr. Humphreys Warner, Louisville.*

In Phthisis, take—

Dextro Quinine. . . 1 drachm

Acidi Sulph. Dil. . . 2 drachms.

Syrup Zinziberis. . . 1 ounce.

Aqua ad. . . 4 ounces.

Keavy & Mattison, Philadelphia.

Palsy (Paralysis.)

Dr. Aiken's pill:

Quinine Sulph. . . 1 grain.

Acidi Arseniosi. . . ½ grain.

Strychnia . . . ½ grain.

Ferri Redact. . . ½ grain.

Mix for one pill. Take three daily.

Or take—

Strychnia. . . 1 grain.

Extract Hyosicamii Fluidum 6 grains.

Syrup of Ipecac. . . 4 drachms

Tincture (inchonii ad. . . 6 ounces.

Mix. A teaspoonful four times a day. *Dr. J. Rhodes Wilkins, Chicago.*

Peritonitis.

Take—

Opil Pulv. . . 20 grains.

Camphora Pulv. . . 5 grains.

Ipecac Pulv. . . 4 grains.

Potassii Bromidi. . . 2 scruples.

Mix—Divide into 20 portions. Take one every four to eight hours. *Dr. J. R. Wilkins, Chicago.*

Or take—

Morphia Sulp. . . 4 grains.

Potassii Bromidi. . . 1 drachm.

Camphora Pulv. . . 8 grains.

Mix. Divide into 30 portions. Take one every four to six hours. *Dr. Hallaway, Lexington.*

Piles (Hemorrhoids.)

Take—

Liquor Magnet carbonat. ¼ ounce.

Potassii Bicarbonat. . . 1 scruple.

Tincture Senna. . . 2 ounces.

Spirits Ætheris Nitrosi, ¼ drachm.

Aqua. . . 2 ounces.

Mix. Take this every morning, fasting in addition. Externally, smear the parts with the following:

Extract Belladonna. . . ½ ounce.

“ Opil Pulv. . . ½ ounce.

Dr. Wm. Allington, London.

For bleeding piles, take—

Ferri Sulphatis. . . 1 scruple.

Extract Aloes Aquosi. . . 1 drachm.

“ Taraxaci. . . qs

Mix. Divide— Make sixty pills. Take one morning and evening or three times a day if necessary. *Dr. Fordyce Barker, N. Y.*

Pleurisy (Acute Pleuritis.)

Take—

Tincture Aconite Rad. . 2 drachms.

“ Opil Deodorat 6 drachms.

Mix. Take eight drops in water every hour or two. *Dr. Bartholow, Philadelphia.*

Or Take—

Potassii Acetatis. . . 15 grains.

Spiritus Ætheris Nit. . ½ drachm.

Vini Ipecacuan. . . 8 drops

Syrup Tolutani. . . ½ drachm.

Mix. For a dose four times daily—at the same time applying turpentine stupes to the affected side. *Dr. De Costa, Philadelphia.*

Pneumonia.

First stage, take—

Quina Sulph.....3 grains.
Calomel.....1 grain.
Sanguinaria Pulv..... $\frac{1}{2}$ grain.
Glycyrrhiza Pulv...1 grain.

Mix. One dose—repeat every four hours.

In addition, take—

Liquor Ammonia Acetatis...2 ounces.
Tincture Opii Camphorated...2 ounces.
“ Aconite Rad1 ounce.

Mix. Dose—a teaspoonful with above. Also externally, cover at the same time the affected side with a warm linseed poultice. *Dr. N. S. Davis, Chicago.*

Poison Oak and Poison Vine (Skin Poisoning.)

Take—

Acetatus Plumbi.....1 scruple.
Tincture Opii.....2 scruples.
Aqua Dist.....6 ounces.

Mix. Cover the affected spot with a cloth saturated with above solution, renewing as often as necessary.

Quinsy (Tonsilitis.)

Take—

Acidi Carbolicci.....20 grains.
Glycerine.....1 ounce.
Sodii Chloridi.....1 drachm.
Aqua Ferv..... $\frac{1}{2}$ pint.

Mix. Gargle to be used every half hour.

Or take—

Tincture Ferridi Muriati...1 ounce.
Dose, twenty drops in two table-spoonfuls of water and gargle every few hours.

Remittent, or Bilious Fever. Continued Fever.

Take—

Spiritus Ætheris Nit...1½ ounces.
Tincture Opii Camphor 1½ ounces.
“ Veratri Viridis 1 drachm.

Mix. A teaspoonful in two table-spoonfuls of water every two or three hours until pulse is reduced to 70 or 75; then widen interval between doses.—*Dr. N. S. Davis, Chicago.*

Or take—

Acidi Hydrobromici...1 drachm.
Syrupi Simplicis.....2 drachms.
Aqua ad.....1 ounce.

Mix for a dose.—Take every hour.—*Dr. Fothergill, London.*

Retention of Urine.

Take—

Magnesia Sulphatis...30 grains.
Potassii Bicarbonat...20 grains.
“ Nitratis.....10 grains.
Aqua.....1 ounce.

Mix and take at a draught. *Sir F. Paget, London.*

Or take—

Spiritus Ætheris Nit...1 drachm.
Syrup Ipecac.....15 minims.
Tinct. Opii Camph...1 drachm.

Mix for a dose. Take every hour if necessary. *Dr. J. Rhodes Wilkins, Chicago.*

Rheumatism, Acute.

Ammonia Bromidi..... $\frac{1}{2}$ ounce.
Tincture Aurantii Cort... $\frac{1}{2}$ ounce.
Aqua.....2½ ounces.

Mix. Dose, a dessertspoonful every three hours. *Dr. DaCosta, Philadelphia.*

Or take—

Acidi Salicylici.....160 grains.
Potassii Acetatis.....320 grains.
Glycerine.....1 ounce.
Aqua qs. ad.....4 ounces.

Mix. Dose, a teaspoonful every two or three hours. *Dr. W. Wilson, London.*

Rheumatism, Chronic.

Muscular, take—

Ammonia Muriatis.....1 ounce.
Extract Cimicifuga Fluidum...2 ounces.
Syrup Simplicis.....1 ounce.
Aqua Laur Cerasi.....1 ounce.

Mix. Dose, a teaspoonful three or four times a day. *Dr. R. Bartholow, Philadelphia.*

Or take—

Ferri Sulphatis.....45 grains.
Extract Colchicum Acetici...22 grains.
“ Cannabis Indica.....15 grains.

Pulv. Aloes.....10 grains.

Mix. Make forty-five pills. Take one before each meal until the bowels regularly move once each day. *Dr. N. S. Davis, Chicago.*

Rickets.

Of Syrup Ferri Iodidi take 8 to 10 drops in water three times daily. *Dr. Jacobs, N. Y.*

Or take—

Vini Ferri.....1½ ounces.
Syrup Tolulanti.....3 drachms.
Liquor Potassii Arsenit...1 drachm.
Aqua ad.....4 ounces.

Mix. A teaspoonful in a table-spoonful of water three times a day, after meals—for a child five to ten years old.

Salt Rheum or Tetter (Psoriasis.)

Liquor Potassii Arsenitis 1½ drachms.
Vini Ferri.....4 ounces.

Mix—Dose, a teaspoonful three times daily after meals, in a wineglassful of water. *Dr. Duhring, Philadelphia.*

Or take—

Sapo Viridis.....4 ounces.
Oleum Picis.....1 ounce.
Glycerinae.....1 ounce.
Aleum Rosemarini...1½ drachms.
Spirits Vini Rect ..½ pint.

Mix—For external use. *Dr. Hyde, Chicago.*

Scarlet Fever.

Mild form with enlarged tonsils, take—

Magnesia Sulphat....6 drachms.
Aqua.....8 ounces.

Solve and add—

Pulv. Guaiacai.....1½ drachms.
Pulv. Tragacanth Comp 2 scruples.

Mix—Dose, one-sixth part of this mixture to be given every four hours until the bowels are freely moved. *Dr. Wm. A. Netley, Boston.*

Declining stages, take—

Ammonia Carbonat.....½ drachm.
Ferri and Ammon Cetrat...½ drachm.
Syrupi.....4 ounces.

Mix—Dose, one or two teaspoonfuls every two or three hours for a child. *Dr. L. Smith, New York.*

Sciatica.

Take—

Copaiba.....2 ounces.
Tincture Lavenidula .2 drachms.
Tincture Hyoscyamii .2 drachms.
Potassii Bicarbonat...½ drachm.
Mucilag Acaciæ.....½ drachm.
Aqua.....3 ounces.

Mix—Take two teaspoonfuls every four hours. *Dr. Garwood, Austin.*

Scrofula.

Take—

Potassii Iodidi.....1 drachm.
Potassii Chlorat....1 drachm.
Potassii Bicarbonat .3 drachms.

Mix—Divide into twelve portions. Take one night and morning in half a pint of warm milk (for adult). *Dr. Erickson, Stockholm.*

Or take—

Calcei Sulphidi....⅞ to ⅓ grain.
Sacch Lactis.....10 grains.

Mix—For a dose take from four to six daily. Make fresh daily and continue several weeks.

Scurvy (Purpura—Purpura Scorbutica.)

Take—

Acidi Gallici.....½ drachm.
Acidi Sulph. Dilute1 drachm.
Tincture Opii Deodo.....1 drachm.
Infuso Rosae Comp4 ounces.

Mix—Dose, a tablespoonful every four hours or oftener. *Dr. R. Bartholow, Philadelphia.*

With debility take—

Quinine Sulph.....3 grains.
Acid Sulph. Dil.....10 drops.
Aqua ad½ ounce.

Mix—for a dose, and take this amount three times daily. *Dr. A. Jacob, New York.*

Seminal Emissions.

Constitutional treatment is indicated; no specific remedies can be relied upon. A very good tonic combination for these cases is—

Strychniae.....1 grain.
Quinin Sulph.....½ ounce.
Tincture Ferri Chloridi ½ ounce.
Glycerinae4 ounces.

Mix—Dose, half a teaspoonful in a glass of water four times a day, before meals if the stomach tolerates it.

Or take—

Strychniae.....1 grain.
Quinin Sulph.....½ drachm.
Ferri Pyrophosphat. .2 drachms.
Spirits Chloroformi...3 drachms.
Glycerinae.....4 ounces.

Mix—Dose, a teaspoonful in a wineglassful of water four times a day.

Sick Headache.

First give emetic; Ipecac 15 grains. Divide into three portions give one every 5 minutes, warm water freely.

Then take—

Chloralis.....1 drachm.
Aque.....2 ounces.

Mix—Dose, a tablespoonful every hour until sleep is produced. *Dr. H. L. Byrd, Harrisburg.*

Or take—

Camphor Pulv.....20 grains.
Extract Cannabis Ind.12 grains.
Extract Hyoscyamii...24 grains.

Mix—Divide, make 12 pills. Take one a night; repeat every two hours if necessary to produce sleep. *Dr. W. A. Netley, Boston*

Small Pox.

In early stages, take—

Sodii Hyposulphit. 10 to 15 grains.

Mint Water qs.

Take every four hours.

In secondary fever, take—

Ammonii Carbonatis. 1½ grains.

Aqua Camphor. 3½ ounces.

Syrupii Simplicis. ½ ounce.

Mix—Take a teaspoonful in a table-spoonful of water every four hours. If necessary add moderate doses of tincture Ferri Chloridii and Sulph. Quini.

In malignant form, take—

Sodii Hyposulphitis. 4 drachms.

Acidi Carbolici. 10 grains.

Aquae Menthae 4 ounces.

Mix—Shake the vial and give one teaspoonful in a tablespoonful of water every one or two hours until some effect is obtained; then lengthen the interval between the doses. *Dr. N. S. Davis, Chicago.*

Sore Throat.

Take—

Capsicum. 5 grains.

Boiling water 2 ounces.

Mix—Cool and gargle.

Or take—

Potassii Chlor. 10 grains.

Aqua 1 ounce.

Mix—Use as a gargle when necessary.

Spinal Disease.

Spinal irritation, take—

Strychniae Sulph. ⅞ grain.

Acidi Phosphorici Dil. ½ drachm.

Syrup Aurantii Cort. 2 drachms.

Aquae 2 drachms.

Mix—Take this amount three times daily. *Dr. Wm. Hammond, New York.*

Chronic Spinal Sclerosis, take—

Hydrarg Chlorid Corrosii 1½ grains.

Sodii Iodidi 4 drachms.

Tincture Stramonii 4 drachms.

Tinc. Phyloctaccai Decant. 2½ ounces.

Elixir Simplicis 2 ounces.

Mix—Dose, a teaspoonful in a small addition of sweetened water four times daily. *Dr. N. S. Davis, Chicago.*

Spinal Meningitis, Cerebro.

In early stage—

Calomel. 6 grains.

Ipecac 3 grains.

Sodæ Bicarb 5 grains.

Bromide Quinine 10 grains.

Mix—Divide into three portions, take

one every three hours, if bowels do not move in four hours thereafter take a full dose of castor oil, taking, meanwhile—

Potassii Bromidi 1 drachm.

Acitat Morphiae 1 grain.

Aqua 1 ounce.

Mix—Take a teaspoonful every 2, 3 or 4 hours as needed. If brain trouble is excessive, apply fly blister on entire back of the neck; also irritate the entire spine with turpentine friction. Further relief to the brain may be obtained with the rubber cap full of pounded ice on the head.

N. B.—Under all circumstances keep the patient in a recumbent position even to stool. If the bladder is inactive add to formulae No. 2 in each dose, Spiritus Etheris Nitrosi one teaspoonful in a tablespoonful of water.

Spotted Fever (Typhus Fever.)

Take—

Quinini Sulp. ½ grain.

Acidi Sulph. Dil. 20 to 30 minims.

Æther Sulph. 15 to 30 minims.

Syrup Aurantii 60 minims.

Decoc. Scopar Comp. 1 ounce.

Mix—for a draught; may be taken every three or four hours. *Dr. Wm. A. Netley.*

A Netley.

Depressed stage, take—

Acidi Nitro-Muriatic ½ drachm

Spiritus Ætheris Nitrosi ½ ounce.

Aqua Camph 5½ ounces.

Mix—A tablespoonful every two or three hours. *Dr. H. Hartshorne, Philadelphia.*

Summer Complaint (Children.)

Take—

Tincture Opii 10 minims.

Ipecac Pulv. 2 grains

Sodæ Bicarb. 20 grains.

Sirup ½ ounce.

Aqua ad 1½ ounces.

Mix—Take half a teaspoonful every hour until relieved; then lengthen interval between doses—a child twelve years old. *Dr. King Chambers, Delaware.*

Or take—

Castor Oil 1 drachm.

Acaciæ Pulv. 1 scruple.

Syrupi 1 drachm

Tincture Opii 4 minims

Aqua Auranti Flor. 6 drachms.

Mix—Dose—A teaspoonful every four hours for a child one year.

Suppression of Urine.

Take—
 Magnesia Sulphate..... 30 grains.
 Potassæ Bicarbonate..... 20 “
 “ Nitratis..... 10 “
 Aqua..... 1 ounce.
 Mix—And take at a draught. *Dr. F. Paget, London.*
 Or take—
 Spiritus Ætheris Nitrosi.... 1 drachm.
 Syrup Ipecac..... ½ “
 Extract Hyoscyamii Fluid... 4 minims.
 Mix—A dose—Take every hour until relieved. *Dr. J. Rhodes Wilkins, Chicago.*

Syphilis.

First year, take—
 Pil. Hydrarg..... 60 grains.
 Exsic Ferri Sulph..... 30 “
 Mix—Make into thirty pills—Take one three times daily. *Dr. F. N. Otis, New York.*
 After first year, take—
 Hydrarg Biniiodidi..... 3 grains.
 Potassii Iodidi..... 2 drachms.
 Tincture Aurantii Cort. 1½ ounces.
 Syrup Aurantii Cort... 1½ “
 Aqua Dist. ad... 8 “
 Mix—A teaspoonful three times daily in half glass of water. *Dr. F. N. Otis, New York.*

Syphilis, Secondary.

Take—
 Pilulæ Hydrarg..... 3 scruples.
 Ferri Sulph. Exsiccate 1 “
 Extract Opii..... 5 grains.
 Mix—And divide into twenty pills; take one from two to four times daily.
 Or take—
 Hydrargyri Cum Creta 2 scruples.
 Quinine Sulphatis..... 1 “
 Mix—Divide into twenty pills, take one from two to four times daily. *Dr. Blumstead, New York.*

Thrush Sore Throat (Aphthæ).

Take—
 Potassii Chloratis..... 1 drachm.
 Acidi Carbolicæ..... ½ “
 Aquæ Dist..... 4 ounces.
 Mix, and apply directly to the affected part. *Dr. R. Bartholow, Philadelphia.*
 Or take—
 Sodæ Sulphitis..... 1 drachm.
 Aqua..... 1 ounce.
 Mix—And use as a wash. *Sir Wm. Jenner, London.*

Typhoid Fever.

Take—
 Potassii Bromidi..... 1 drachm.
 Morphine Sulp..... 1 grain.
 Camphoræ Pulv. ... 10 “
 Ipecac..... 3 “
 Mix—Divide into six powders, dose one every three to six hours. *Dr. A. B. Palmer, Ann Arbor.*
 Diarrhea in typhoid fever, take—
 Olei Terebinth..... 39 minims.
 Tincture Kino Fl.... 2 drachms.
 Extract Opii Hiz... 10 to 25 mins.
 Mucil Amyli qs. ad... 2 ounces.
 Mix—Use as an enema two or three times in twenty-four hours if needed. *Dr. Palmer, Ann Arbor.*

Typhus Fever.

With typhoid symptoms, take—
 Quini. Sulp..... ½ grain.
 Acid Sulph. Del. 20 to 30 minims.
 Æther Sulph..... 15 to 30 “
 Syrup Aurantii..... 60 “
 Decoc. Scopar Comp... 1 ounce.
 Mix—For a draught, to be given every three or four hours. *Dr. W. A. Netley.*
 In depression, take—
 Acidi Nitro Muriatic Dil. 15 to 20 minims.
 Spiritus Ætheris Nitrosi.... ½ ounce.
 Aqua Camph..... 5½ “
 Mix—A tablespoonful every three or four hours. *Dr. H. Hartshorne, Philadelphia.*

Ulcers.

Syphilitic, serpiginous, take—
 Hydrarg Chloridi Carros... ½ drachm.
 Acidi Carbolicæ..... 1 “
 Glycerinae..... 1 ounce.
 Aqua..... 15 ounces.
 Mix—Use as a wash.
 Or take—
 Ung. Hydrarg Nitratis..... 2 drachms.
 Bals Pure..... ½ “
 Gelati Petrolei..... 1 ounce.
 Mix—Spread on absorbent cotton and apply. *Dr. Blumstead, New York.*

Wen (Sebaceous Cyst, Steoloma).

Treatment exclusively surgical; simply opening, or partial extirpation no use; a small investing membrane remaining gives rise to new cysts. Make a straight incision across the entire involved surface; dissect out the entire cyst; if not entirely removed, destroy the remaining tissue with caustic. *Ziemsan, Munich.*

Whooping Cough.

Take—

Potassii Bromidi.....1 drachm.

" Bicarbonat.....12 grains.

Spiritus Chloroform.....12 minims.

Syrup Papaveris..... $\frac{1}{2}$ ounce.

Aqua.....3 ounces.

Mix—Dose—A dessert spoonful every six hours—child 2 years old. *Dr. Macrobin, Springfield.*

Or take—

Syrup Scillae Comp..... $1\frac{1}{2}$ ounces.Tincture Sanguinariae..... $\frac{1}{2}$ "

" Opii Comp.....2 "

Potassæ Bromidi..... $\frac{1}{2}$ "

Mix—Dose—For child five years old, twenty drops in sweetened water every three to six hours as required. *Dr. N. S. Davis, Chicago.*

Worms.

Intestinal, take—

Olei Chenopodii.....1 drachm.

Mucilag Acaciae.....2 "

Syrup Simplicis.....1 ounce.

Aqua Cinnamomi.....2 "

Mix—A dessert spoonful three times

a day for three days—repeat after several days. *Drs. Meigs & Pepper, Philadelphia.*

Or take—

Acidi Carbolic.....10 to 20 drops.

Glycerine.....1 ounce.

Potas Chlorat ad sat.

Aqua.....8 ounces.

Mix—Use as an enema for thread worms. *Dr. W. H Van Buren, New York.*

Yellow Fever.

In retching and vomiting, take—

Morphia Sulphat.....4 grains.

Creosoti.....1 drachm.

Spiriti Vini Rect.....4 ounces.

Mix—A tablespoonful every three or four hours as needed. *Dr. Dowell, Greenville, Texas.*

When fever is high, take—

Hyd. Chlorid Mite.....12 grains.

Quinine Sulp.....12 "

Pulv. Opii et Ippecac 12 "

Mix—Divide into four portions, take one every three hours. *Dr. Dowell, Greenville, Texas.*

MISCELLANEOUS REMEDIES.

Asthma.

This disease has often been cured by the use of chestnut-leaves. The dry leaves are used after they have become ripe in Autumn, and a teacupful of the tea made from these is to be drunk at breakfast each morning.

ANOTHER—Dr. Bartholow, of Philadelphia, gives the following as one of the best prescriptions for asthma. It is to be taken between attacks: Potassia bromide, one ounce; potassia iodide $\frac{1}{2}$ ounce; water, four ounces. A teaspoonful three times a day.

Bed Sores.

Beat up the white of an egg and cover the surface. This will allay inflammation and promote recovery.

Bleeding at the Nose.

A good remedy for bleeding at the nose, as given by Dr. Gleason, is a vigorous motion of the jaws, as if in the act of mastication. In the case of a child, a wad of paper should be placed in the mouth and the child instructed to chew it hard. It is the motion of the jaws that stops the flow of blood.

Bilious Colic.

A teaspoonful of common baking-soda dissolved in half a teacupful of water, taken at the commencement of an attack, will generally afford relief.

Bruises and Sprains.

Bathe the affected parts with hot milk and arnica, in the proportion of nine parts of the former to one of the latter, and in severe cases immerse the whole limb in the solution. This is a new combination, but a very effective remedy.

Burns and Scalds.

Apply immediately a thick covering of wool to the burnt part; in the course of half an hour very little pain will be felt and scarcely any blister will remain. As this remedy is so simple, no housekeeper should be without loose wool at hand, in case of an accident. This remedy was discovered by the child of a wool-comber having been dreadfully scalded; its mother laid it in a basket of newly carded wool,

while she ran for a doctor; when she returned she found the child fast asleep among the wool and when it awoke the excessive pain had subsided. We have frequently tried it and invariably with success.—*Hall*.

ANOTHER—Apply to a burn, bruise or cut, the moist surface of the inside coating of the shell of a raw egg; it will adhere of itself and heal without pain.

Cholera.

An efficient remedy for the cure of cholera, cholera-morbus, diarrhea, dysentery and summer complaint, is

Tinct. Cayenne,	- - -	one-half oz.
" Opium,	- - -	" "
" Rhubarb,	- - -	" "
Essence peppermint,	- - -	" "
Tinct. camphorated spirits,	-	" "
Soda,	- - - - -	" "

Thirty drops for an adult; five to ten drops for a child. This remedy should always be kept on hand during the summer. One dose is often sufficient.

Chilblains.

Put on a pair of cotton socks, dip your feet in cold water, and draw on your woolen stockings outside. The torment will be assuaged in a few minutes and a cure for the season often effected in a few days.

ANOTHER—Bathe the parts affected in the liquor in which potatoes have been boiled, at as high a temperature as can be borne. On the first appearance of the ailment, indicated by inflammation and irritation, this affords almost immediate relief. In the more advanced stages, repetition prevents breaking out, followed by a certain cure; an occasional application will operate against a return, even during the severest frost.

Onions are reputed a cure for chilblains. They are to be bruised and bound on the affected part for several nights in succession.

Cancers.

When cancer of the breast is suspected, the patient should at once commence the use of the tincture of poke-root in five drop doses three times a

a day, and at the same time apply it to the tumor by means of cloth saturated with it. This treatment has been frequently known to remove the tumor.

Catarrh.

Dissolve a tablespoonful of borax in half a tumbler of water. Pour into the hollow of the hand and snuff it up the nose five or six times a day. I have cured this disease with this remedy when all other means had failed.—*Dr. Barron.*

ANOTHER—Camphor water in five drop doses every hour for four or five hours, will generally break up a coming attack of catarrh or influenza.

Chapped Hands, Lips or Wounds.

Simmer half a pint of sweet cream over the fire till it resembles butter and forms a thick, oily substance. Use as ointment for fresh or old wounds, cracked lips or hands.

Chills and Fever.

A strong tea of garden strawberry roots drunk freely will effectually cure chills and fever.

Cholera Infantum.

Three or four injections of Wakefield's Blackberry Balsam have cured this disease when all other remedies had failed.

Injections of brandy are also a superior remedy for the same purpose.

Collodion for Corns.

Paint the corn with collodion, as often as convenient, night and morning. After a couple of days soak the corn in water as hot as can be borne, when the corn, or a portion of it, will come away with the application. Repeat till all trace of the trouble has disappeared.

Consumption.

FOR CONSUMPTIVE COUGH—Add a handful of the bark of the root of what is known as the "Choke Cherry" to a quart of water. Use as a beverage daily, in place of water.

Those who have used this remedy pronounce it of greater efficacy than any of the tonics that are usually employed in this disease. It has been known to cure patients after they had abandoned hope of recovery.

The wild cherry-tree bark contains about the same medical properties as the choke-cherry, and may be used in its stead when the latter cannot be had.

THE TAR CURE—Tar, three tablespoonfuls; strained honey, three tablespoonfuls; yolks of three fresh eggs; wine, one-half pint. Dose, one tablespoonful three times a day, before meals. Dr. East, a distinguished physician of the State of Texas, says, "It is superior to all other remedies of which I have any knowledge in the treatment of this disease."

MULLEIN—Make a strong decoction of mullein, sweeten with coffee-sugar and drink freely two or three times a day. Continue its use three to six months. Young or old plants either may be used when dried in the shade. A writer in speaking of it says, "It has been known to cure a number of cases after hemorrhage of the lungs had set in and the hectic flush was on the cheek."

CROTON OIL AND COD LIVER—An application of croton oil diluted in olive oil, applied to the chest of a consumptive in severe cases, will bring out an eruptive rash; as soon as this has partially healed, repeat the application. Then apply at night to the chest and back cod-liver oil as hot as can be borne, washing off in the morning with a solution of strong salt and water and vinegar. Repeat every day taking the cod-liver oil internally. This has effectually cured cases pronounced hopeless by physicians.

Coughs and Colds.

Cold in the head is sometimes relieved by snuffing up a pinch of pulverized sugar.

To drink immediately before retiring of milk as warm as can be swallowed, will frequently relieve a cold.

FOR A COUGH—Dr. Randall gives the following as a favorite remedy for colds: Take the common white turnip, cut into thin slices and sprinkle powdered rock-candy between them, and when dissolved take from a half to a tablespoonful four or five times a day.

ANOTHER—To one teacupful of white sugar, add the same amount of rain-water and a small-sized onion cut in pieces. Boil the whole together down to a sirup. Dose from one-fourth to one-third teaspoonful, after each coughing-spell; and in a day or two your cough will be relieved.

ANOTHER—To two quarts of soft water add one-half teaspoonful of flaxseed, three ounces of licorice, three of raisins, each cut in two parts. Boil very slowly until reduced to near a quart. Then add two tablespoonfuls of lemon-juice (if it is not at hand use vinegar) and sweeten to the taste. Dose, two tablespoonfuls every three or four hours and double that amount on retiring at night. This cures bad colds in a day or two. It has cured many colds in a fortnight that had begun to exhibit signs of consumption.

Croup.

Put a piece of unslaked lime of the size of an orange into a pitcher, pour a little hot water onto it, cover the head of the child with a cloth, and let the child inhale the vapor of the lime under the cloth. Renew the lime every half hour until the child breathes freely. The worst cases have yielded to this treatment.—*Dr. Napheys.*

MEMBRANOUS CROUP—Give from five to eight drops of the fluid extract of Jaborandi every half-hour. This is a sovereign remedy for this form of croup. Dr. Dover regards it as almost a specific.

Dandruff.

Take of ardent spirits, one-third; castor-oil, two-thirds; mix and apply to the scalp of the head and immediately afterwards use the comb. The dandruff will come off in masses. Afterwards, wash thoroughly with castile soapsuds; though in cases, as with men, where the hair is not long, the washing may be dispensed with. This is the best remedy we have ever known. A single application is often sufficient.

Diabetes.

This disease has been cured by the patient taking a tablespoonful of common pulverized chalk in a tumbler of milk, three times a day.

Deafness.

Put one ounce of angelica root in two ounces of brandy and let it stand for two days. Put two drops in the ear three times a day. Mr. O. Wells, of Jackson, Pa., was cured with this remedy after being nearly deaf for a number of years.

Diarrhea.

Coto bark is a recent remedy for this disease and pronounced almost a specific for it in its various modifications. Dose of the fluid extract, two to three drops four times a day.

Diphtheria.

At the first indication of diphtheria, make the room close; then take a tin cup and pour into it a quantity of tar and turpentine, equal parts. Then hold the cup over a fire so as to fill the room with fumes. The patient, on inhaling the fumes, will cough up the membranous matter. The fumes of the tar and turpentine loosen the matter in the throat, and thus afford the relief that has baffled the skill of physicians.

ANOTHER—Put a teaspoonful of sulphur in a wineglassful of water and stir it well. When well mixed use it as a gargle. It will give immediate relief. Also swallow some of the mixture. If the throat is too nearly closed to admit of gargling, blow the sulphur through a quill into the throat and then gargle with the mixture. If the patient cannot gargle, take a live coal, put it on a shovel, and sprinkle a spoonful of sulphur upon it and let the sufferer inhale the fumes.

Dysentery.

One-half pint of the seeds of the plantain, boiled in one quart of milk and drunk freely, will cure either dysentery or flux.

CHRONIC DYSENTERY.—To take half a pound of grapes every four hours through the day, the skins and seeds being rejected, is in many instances an effectual cure for cases of chronic dysentery.

ANOTHER.—Rhubarb and wild-cherry bark, a handful, four tablespoonfuls of sugar; simmer together. Dose, a tablespoonful to an adult, every hour, until the pain ceases. Make it fresh every day. The "Indian Physician" pronounced this an infallible remedy in dysentery.

ANOTHER—Take of:
 Pulverized opium, - - - $\frac{1}{2}$ drachm
 " camphor, - - - 2 "
 Ipecac, - - - 1 "
 Cream tartar, - - - $\frac{1}{2}$ ounce.
 Triturate well in a mortar. Dose ten grains to a half teaspoonful three times a day. In severe cases take every four

hours. In chronic cases, dose five to ten grains three times a day, to be continued till the complaint entirely disappears. This is not only an admirable remedy for dysentery, but an invaluable diaphoretic powder.

Dyspepsia.

Four tablespoonfuls of lime-water, mixed with a cup of milk and taken once a day, is a very excellent cure in some forms of dyspepsia.

Earache.

Extract the oil from the white of a hard-boiled egg by pressure through a thin cloth. From a warm teaspoon put one or two drops of this oil into the ear. It will give almost an immediate relief.

ANOTHER.—Drop a few drops of very warm salt water in the ear. It will often relieve when other remedies have failed.

Fever and Ague.

In some parts of the Southern States cotton-seeds are reputed an excellent remedy for fever and ague, by boiling one pint of the seeds in three pints of water down to one pint. One-fourth to one-half of this to be drunk warm one hour before the expected return of the chill. This is generally sufficient, but if not it is to be repeated.

ANOTHER.—Among the simple remedies that have been found successful in the treatment of this disease is charcoal. It is said to have been especially successful in those cases in which the digestive organs have been more particularly affected and known by symptoms of nausea, vomiting, hic-cough, flatulence, diarrhea, dysentery, etc. The remedy has been given in doses of one-fourth to a half teaspoonful two or three times a day, along with arrow-root or some other substance by which it could be more readily swallowed, or may be used in milk.

COOLING DRINK.—Take four ounces of raisins, four ounces of tamarinds, boil in three and a half quarts of water, quite slowly, for five or ten minutes; strain and add one-fourth pound white sugar. This is excellent as a drink in all cases of fever. Take wineglass doses as often as the patient may wish.

ANOTHER.—A quantity of tamarinds infused in water forms a very refreshing and excellent drink, for sick and convalescents from diseases, especially

from fevers. While at the same time it keeps the bowels open and the feces soluble.

Giddiness.

Giddiness usually arises from a disordered state of the stomach, and a little pearlsh, as much as will lay on a nickel, dissolved in water will alleviate it.

Gleet.

The following is regarded as almost a specific for the cure of gleet. Inject one tablespoonful three times a day:

Quinine.....	10 grains
Dilute Sulphuric Acid	5 drops
Rose Water.....	8 Tablespoonfuls

Mix.

ANOTHER.—The following is Dr. J. L. Wright's favorite prescription for this disease. He says it excels every other remedy he ever used. Mix the ingredients and inject one tablespoonful three times a day:

Iodiform	20 grains,
Sweet Oil.....	2 ounces,

Mix these in one bottle, and the following in a second bottle, adding the two together subsequently:

Golden Seal.....	4 drachms,
Glycerine.....	1 ounce,
Fluid extract of Hyosciamus.....	2 drachms,

Headache.

A very good remedy for headache is thirty drops of aromatic spirits of ammonia in a tablespoonful of water. At the same time put a mustard plaster on back of the neck.

ANOTHER.—The oil of peppermint, applied to the head, is among the best external remedies in use, and with many persons it will afford speedy relief.

SICK HEADACHE.—An eminent medical author says, "The most efficient preparation I ever used is composed of one teaspoonful of prepared charcoal, pure baking-powder one-half teaspoonful, and twenty drops of essence of peppermint; mix well together and take at one dose. To be repeated every thirty minutes until relief is obtained. The patient should be in a dark room. Bathe the head with equal parts of warm vinegar, spirits and rain-water.

NERVOUS HEADACHE.—Take from one-half to a teaspoonful of firwein three times a day. This is a new remedy

and those who have employed it praise it highly.

COLD HEADACHE.—When the head is cold to the touch, accompanied by aching, lager beer has generally been found to afford relief. One glass is often sufficient.

Heart-Burn.

The juice of lemon, diluted with a little water, will often give prompt relief.

Hemorrhage of the Lungs.

To one-half teacupful of simple sirup add one tablespoonful of spirits of turpentine. Mix. Take a teaspoonful of this mixture in the mouth, and as soon as it has to be ejected take another. This has arrested hemorrhage of the lungs when all other means had failed.

Hives.

Cosmoline applied to the surface of the skin two or three times a day will cure all scaly eruptions of the skin characterized by itching or burning.

Hot Water Cure.

The following is the "hot water treatment" in popular use for Consumption, Diarrhea and Dyspepsia. Dr. Ephraim Cutter, an eminent physician of New York city, says that the first use made of hot water as a medicine, or "health regulator," was made by Dr. James H. Salisbury, of New York, who by a series of experiments demonstrated its efficacy. It must be hot, *i. e.*, not less than one hundred and ten degrees nor more than one hundred and fifty degrees Fahrenheit. For diarrhea the hotter the water the better. For hemorrhages it should be at blood heat. The quantity of hot water drunk varies from one-half pint to a pint and one-half, according to the condition of the patient and the disease treated. The hot water should be taken one or two hours before each meal, and half an hour before retiring. This gives the water time to operate before food enters the stomach or sleep comes. The water should be sipped slowly, and the swallowing of half a pint should take half an hour. A teacher in New York city, who was dying with consumption, was cured by the use of hot water and tender beef. He began by taking one cup of hot water, as hot as it could be borne, an hour before

each meal, and gradually increased the dose to three cups. He gained fourteen pounds in two months.

Kidney-Disease.

Use asparagus as a diet. This is said to be very effective for the removal of this affection.

ANOTHER.—Fifteen drops of turpentine in a glass of flax-seed tea three times a day is used with excellent results. A Canada Pitch Plaster, 4x6, worn over the kidneys is an indispensable aid to the above—excellent of itself.

Menses, Cure for Suppressed.

Make a strong tea of smart-weed and let the patient drink freely of it. Put the feet in hot mustard-water, for fifteen to thirty minutes, before going to bed.

ANOTHER.—A strong tea of the hair-capped moss (known as birds' wheat) will nearly always accomplish the same purpose and that speedily. It should be drunk while hot and used freely, using a vaginal injection of hot water at the same time.

Milk, to Check Flow of.

Take of powdered camphor-gum and powdered skunk-cabbage root, each one ounce; fresh lard, two ounces. Mix and spread on thick, brown paper and keep applied to the breast.

Melancholy.

Roll up some asafetida into pills the size of a common white bean, and take thrice daily—after meals. This is excellent for relieving this difficulty.

Neuralgia.

Horse-radish root, bruised and bound upon the face or other parts where the pain is located, has been found very valuable and will give relief in a great many cases.

ANOTHER.—The application to the affected part of flannel cloths wrung out of hot water, will often relieve the worst cases.

ANOTHER.—Mullein leaves dipped in boiling milk and spread hot on the affected surface will relieve this disease, and will relieve inflammatory rheumatism also.

GERMAN REMEDY.—The following is the celebrated German remedy for neuralgia; it can scarcely be extolled

too highly. Bruise the leaves of the common field-thistle, and use hot as a poultice on the parts affected. Drink, also, a wineglassful of a tea, made from the leaves of the same, three times a day.

Nervous Exhaustion.

The tincture of Cocoa will afford effectual relief for this difficulty. It is to be given in teaspoonful doses, to which there should be previously added, one teaspoonful of sugar and two tablespoonful of water.

Pain in Breast.

The following will afford relief. Drink freely of a tea of the buds or twigs of sycamore. If the tincture is used, a teaspoonful may be taken two or three times a day.

Pain in the Side.

Take a fresh cabbage-leaf, warm and bind it to the side; let it remain ten or twelve hours, when the pain will generally be removed; but if not, repeat the operation.

Piles.

Take the garden celandine (*Touch-me-not*), stew in fresh lard and make an ointment of it. Apply twice a day. This will cure when other remedies fail.

ANOTHER.—A decoction of witch-hazel, taken in spoonful doses, and at the same time used as an injection, is said to be equally effective.

Poison Oak and Poison Vine.

Let some buttermilk stand until there is a thick whey on the top. Stir and apply to the affected parts three times a day. It will effect a speedy cure.

ANOTHER.—Wash the parts four times a day with lime-water, and if the vesicles are broken apply sweet spirits of nitre and repeat next day.

ANOTHER.—Poisoning from these vines may be cured by bathing the parts with a solution of either borax, copperas or sugar of lead.

Removal of Freckles.

Lemon-juice mixed with water is a very good remedy for the removal of freckles. Mix and put in a well-corked bottle. Wash the hands and face with this several times a day (letting it stay

on several minutes before drying with the towel). This preparation is highly recommended by the celebrated Dr. Wilson, of London.

Rheumatism.

Take two quarts of sliced potatoes and add sufficient water to cover them; boil them until soft and then pour off the liquid and bathe the affected parts with it as hot as can be borne, night and morning. This simple remedy has been known to cure the most obstinate cases of rheumatism. Oftentimes relief is obtained after a few applications.

ANOTHER—Dr. Hall says, "Oil of mustard well rubbed into the skin of the part twice a day is an efficient remedy."

Run Round.

Dip the finger repeatedly into boiling hot water; let the water be put an inch and a half deep; a dozen dips in all with intervals between will take the soreness away and relieve this difficulty.

Salt-Rheum.

A strong tincture of blood-root made in vinegar, is sufficient to cure almost any case of tetter, as well as ring-worm. Apply twice daily. The yellow-dock root similarly prepared and used is said to be equally effectual.

Scrofula.

A very excellent cure for this disease is a tea of burdock-leaves. It is to be drunk freely three times a day. One author claims to have cured more than fifty cases with it.

ANOTHER—A coffee made of roasted acorns is an excellent remedy in all scrofulous affections.—*Prof. J. H. Bundy, of the California Medical College.*

Scurf, To Remove.

A simple and effectual remedy for removing scurfs from the heads of infants is to add a lump of unslaked lime the size of a walnut to a pint of water; let it stand all night, then pour the water off from the sediment; add one gill of the best vinegar and wash the head with soapsuds and then with the mixture.

Sore Eyes.

An old and popular remedy for ordinary inflammation of the eye is to bind on them at night a poultice of tea-

leaves. It will afford relief in many cases.

ANOTHER—The cactus-plant is a favorite remedy with the Spanish people for the cure of this affection, and more especially if it is of a chronic, inflammatory nature. The outside or covering of the plant is removed, then pounded and applied in the form of a poultice.

Salves.

BLACK SALVE—Common resin, one-half ounce; beeswax, one-half ounce; Venice turpentine, one-quarter ounce; olive oil, one pint. Put all in a vessel and raise almost to a boiling point. Then add slowly two and one-half ounces of red lead, while on the fire. Be careful not to burn. Boil very slowly until it becomes of a dark-brown color. After removing, when it becomes nearly cold, add one teaspoonful of camphor. This is a superior article for all healing purposes, especially for scalds, fistulous ulcers, scrofulous sores, etc. It should be renewed daily.

DISCUTIENT OINTMENT—Take of
 Extract stramonium.....1 drachm
 “ hamamelis.....1 “
 “ hydrastis.....½ “
 “ hyosciamus.....½ “

Mix with vaseline sufficient for a soft paste.

HEALING SALVE—One-half pound beeswax, one-half pound salt butter, one-quarter pound turpentine, six ounces of balsam of fir. Simmer slowly for one-half hour, when it is ready for use. Dr. M. Curtiss, of Oakland, Cal., says he has used this preparation for sores, wounds, burns, etc., for thirty years and has never found anything to surpass it.

ANOTHER—Linseed oil, beeswax, rosin and mutton-tallow, equal parts, and heat only sufficient to mix or melt them together. This forms an excellent salve for all purposes where a salve is needed.

RUSSIA SALVE—Take equal parts of yellow wax and sweet oil; melt slowly, carefully stirring; when cooling, stir in a small quantity of glycerine. Good for all kinds of wounds, etc.

Sores and Bruises.

The following is a favorite remedy for these difficulties; Raisin-stems, one ounce; jimson leaves (green or dry), one ounce; tobacco leaves, one ounce; fresh lard, three-fourths of a pound.

After bruising the stems, put all into a vessel and simmer three hours. Strain. Cut a lump of beeswax double the size of a nutmeg into fine pieces; add to the above and heat slowly until melted, stirring until cool; at which time add two teaspoonfuls of spirits of turpentine and stir the whole until it is cool, when it is ready for use. This is superior to “*Trask's Celebrated Magic Ointment*,” and will speedily remove soreness and pain and tend to heal rapidly. For neuralgia it should be applied over the painful part. A California physician says, “in my hands it has acted like a charm in relieving the pain.”

Sore Mouth.

Powdered borax, one teaspoonful; glycerine, two tablespoonfuls; water, one-half teacupful. This is excellent in sore and cracked lips and tongue, in typhoid and other fevers, in fissures, cracked or chapped hands, etc., and will make the roughest skin smooth and soft.

Sore Throat.

When the throat first begins to get sore, take a slice of salt pork, sprinkle it well with black pepper, and bind it around the throat with flannel just before going to bed at night. It will generally effect a cure.

GARGLE—One of the best gargles for common sore throat and to loosen the phlegm, is a teaspoonful each of alum, salt and tincture of Cayenne pepper. Use every two or three hours.

ANOTHER—Take yeast, a wineglassful; milk, a gill; sweeten with molasses. Excellent for sore throat.

Sprains.

Take a tablespoonful of honey, the same quantity of salt, and the white of an egg; beat the whole up incessantly for two hours, then let it stand for an hour and anoint the place sprained with the oil which will be produced from the mixture. This is said to have enabled persons with sprained ankles to walk in twenty-four hours entirely free from pain.—*Prof. King.*

Sty on the Eye.

Apply two or three drops of harlem-oil on the lid which is affected and carefully rub it along the edge and over the lid, and it will effectually scatter the sty, unless very far advanced.

This oil is likewise good for weak eyes.

Suppression of Urine.

One of the best remedies in use is to stew onions in sweet-oil to the consistency of a poultice, and apply to the lower part of the abdomen. We have never known it to fail in giving immediate relief. It is especially valuable for this difficulty in cases of pregnancy.

Sweating Feet.

Tannin is an admirable remedy for sweating feet. Half a teaspoonful sprinkled in the stockings for a few days strengthens the skin without interrupting too much the perspiration.

Toothache.

Powdered alum will not only relieve the toothache, but has a tendency to prevent decay, putting a small portion in the tooth and covering it with cotton.

ANOTHER—Saleratus put in and around the tooth will often relieve this difficulty.

ANOTHER—The tincture of aconite is another very excellent remedy, applied on cotton. Equal parts of ammonia and water are likewise efficacious.

Tape-Worm.

Kameela, two drachms; simple sirup one tablespoonful. Mix and take at a dose, after fasting one day. Follow this in four or five hours with two tablespoonfuls of castor oil and one teaspoonful of spirits of turpentine. One dose of this medicine is usually sufficient to expel the tape-worm.

Ulcers.

A strong decoction of walnut leaves in which a small portion of sugar has been dissolved makes a valuable wash for cleansing and healing ulcers.

For Vomiting.

A few swallows of warm water, sweetened with sugar, will often allay this difficulty. Remedies for vomiting should always be taken warm. Strong coffee without milk or sugar will often check vomiting.

ANOTHER—Take salt, two ounces; cayenne, one ounce; vinegar, one quart. Mix. Dose, a tablespoonful whenever there is great nausea or vomiting. A medical writer says that this compound is the best remedy to stop vomiting that he had ever used.

ANOTHER—A tablespoonful of a strong tea made of cloves, given every ten minutes will check vomiting.

ANOTHER—From a half to a teaspoonful of pepper-sauce diluted with water will generally produce the same effect.

Warts.

A medical writer recommends kerosene-oil. He says, "I began its use three months since, when I had a number on my hands, some very large and painful. Where they were covered with hard cuticle I carefully pared it off and saturated them daily, using a camel's hair pencil and common coal-oil. They began to disappear in about two weeks and are now entirely gone."

ANOTHER—Common salt and alum in equal quantities, burned to a powder and bound on warts, will remove them. The juice of garden celandine (Touch-me-not) applied twice a day, is said to be effectual for the same purpose.

White Swellings.

In white swellings and other painful diseases the application of heat in the form of steaming is attended with the happiest effects and, indeed, is often a complete and sovereign remedy. Cases have been cured by its repeated application, which had baffled the skill of noted physicians.

Wounds.

Smoke the wound, or any bruise or wound that is inflamed, with burning wool or woolen cloth. Twenty minutes in the smoke of wool will take the pain out of the worst wound; repeated two or three times it will allay the worst cases of inflammation arising from a wound. It has saved many lives and much pain.

MISCELLANEOUS RECIPES.

For Stopping the Flow of Blood

—The extract of witch-hazel, is one of the best articles that can be used. It is kept at drug stores.

Frost Bites—Make a lye of hard wood ashes. Wash once or twice a day. Will cure any case in three or four days. Care should be taken not

to make the lye too strong, or it will blister the feet. This remedy is highly recommended by those who have used it.

Bee-Stings—Wet indigo and apply. It will at once cure stings of any insects.

Cerebro Spinal Meningitis—The following are the most approved professional remedies for this disease:

DURING THE FIRST 24 HOURS.—Fluid extract of ergot, 1 oz.; spirits ammonia aromatica, 2 ozs.; mix. Take a teaspoonful in water every four hours. In addition, acetate of potash, 12 drachms; camphor water, 6 ozs.; mix: take a tablespoonful every two hours until sweating occurs.

In addition to these remedies, add a warm bath, followed by wrapping in flannel or rubbing with dry mustard, every three to six hours, to a child of five years, according to the urgency of the case.—*Dr. J. B. Hamilton, Washington, D. C.*

For controlling the restlessness and delirium of the disease: Bromide of potash, 10 to 20 grains; tincture of hyoscyamus, 15 to 40 drops; mix: a dose to be taken every five to six hours.

Where the disease is attended by persistent vomiting: Hydrocyanic acid, dilute, 2 to 5 drops; bicarbonate of soda, 5 to 10 grains; mix: take every three to four hours.

In children: Bromide of potash, 5 to 6 grains; water, 2 tablespoonfuls; taken at a dose, every two, three or four hours.—*Dr. F. Lewis Smith.*

Sore Nipples—Fluid extract of hydrastis canadensis and glycerine, of each, one ounce; tannin, thirty grains; mix and apply with a brush or lint. It is one of the most speedy and effectual remedies in use for this affection.

To Prevent Hair Falling Out—Make a strong decoction of white oak bark in water and use it freely. It is best to make but little at a time and have it fresh at least once a fortnight.

Cravats and Collars—should not be worn so tight as to compress the many large vessels of the neck, which connect with the brain, and they should never, under any circumstances, be worn during the night.

How to Keep Sick-Rooms Cool—It consists in opening the windows wide and covering the openings with cloths steeped in water. It is well known how largely water in passing from the liquid to the gaseous state,

absorbs caloric. This absorption lowers the temperature of the room from five to six degrees in a few minutes, and the humidity diffused in the air causes the heat to be more readily endured. By this system patients, even in the hottest time in summer, find themselves in a perfectly fresh atmosphere.

Neutralizing Mixture—Take of rhubarb (pulverized), two scruples; saleratus (pulverized), two scruples; peppermint-plant (pulverized), two scruples; add half a pint of boiling water and sweeten with loaf sugar. Dose, one teaspoonful every one or two hours, according to the symptoms. This is among the most valuable preparations in use for cholera-infantum, cholera, cholera-morbus, diarrhea, dysentery, etc. Its operation and action appear to be specific or almost infallible. This the celebrated "Neutralizing Mixture."

To Improve the Complexion—Mix sulphur in a little milk and after standing an hour or two if the milk (without disturbing the sulphur) is rubbed into the skin, it will keep it soft and make the complexion clear. It is to be used before washing. In warm weather the amount necessary to be used must be prepared each evening, otherwise it will become putrid.

To Beautify the Hands—To a wineglassful of glycerine add the yolk of two eggs. Mix very thoroughly or rub in a mortar and bottle for use. No better preparation can be had for the hands.

To Purify Water—Water is purified by—1, filtration through gravel, sand or soft porous stone and charcoal. Or, 2, it may be sweetened and improved by charcoal, coarsely pulverized and thrown into a vessel of water. 3, by boiling and distillation.

Beds Rendered Healthy—Beds, instead of being made up as soon as people rise out of them, ought to be turned down and exposed to the fresh air from the open windows through the day.

Feather-beds, especially for youth and in warm weather, are very unhealthy and should never be used except in very cold weather.

They should be opened every third year, the ticking washed, the feathers dressed and returned.

To Fill a Decayed Tooth—When

a tooth is too much decayed to be filled by a dentist, or the person is at a distance from one, gutta-percha will be found a useful expedient. Drop a small piece of this substance in boiling water, then taking off as much as will probably fill the tooth nearly level, press it, while soft, into the cavity. Then hold cold water in the mouth on that side to harden it. It has been known to preserve teeth for two or three years and keep them free from cold.

Cold Cream—The following is an admirable receipt for Cold Cream for improving the skin and complexion, and curing chapped hands: Take 4 tablespoonfuls rose-water, 2 ozs. spermaceti, $2\frac{1}{2}$ ozs. almond-oil, 2 drachms white wax, 1 drachm citronella or any other perfume and a few drops of Attar of Rose. Put oil, wax and spermaceti in a thick glass and put in a dish of hot water, when it will slowly melt. When melted take from fire and add rose-water and perfume. Put all in a porcelain dish and beat a long time with spoon or fork.

Singers and Public Speakers—Many have found tar-water to cleanse and open the lungs and thus impart ease and freedom in speaking. A quart of tar is to be stirred into four times as much water, or it may be weaker, as the stomach can bear it. Of this take about a gill, mid-way between meals, four times a day. The best season in which to commence taking this medicine is the Spring. Continue for two weeks or longer, if needed.

To Banish Mosquitoes—Sprinkle a little brown sugar on some hot coals in room; it will banish these unwelcome intruders for the night.

Protection from Mosquitoes—These pests have a great dislike to the odor of the oil of cinnamon or cloves. Mix one-half teaspoonful of the oil (not the essence or spirit) with an ounce of spermaceti ointment and rub it upon the face and hands.

To take Paint off of Clothes—Rub with spirits of turpentine or of wine, either will answer if the paint is but just put on. But if it is allowed to harden, nothing will remove it but spirits of turpentine rubbed on with perseverance. Use a brush, sponge or soft rag.

For Cleansing Cloth—A writer gives the following: "Instead of us-

ing ammonia and alcohol for cleansing coat-collars and other soiled garments, buy Aquila or Spanish bark, sold by grocers and druggists. A piece eight inches long by four wide will cleanse a dirty coat perfectly. Tear the bark into very small pieces, pour over it a quart of hot water and when it is nearly cold sponge the coat, beginning at the collar; hang it in the wind till dry and if any spots remain go over it again with the bark solution; then dry and press it. Silks, poplins, delaines of delicate tints, can be perfectly cleansed without affecting their color. Woolen goods should be immersed in the water, rubbed gently, rinsed in warm, soft water and ironed while damp.

ANOTHER—Take benzine and apply to the soiled parts by rubbing with a sponge.

To Keep Butter—A simple mode of keeping butter in warm weather where ice is not handy is to invert a common flower-pot over the butter with some water in the dish in which it is laid. The orifice at the bottom may be corked or not. The porousness of the earthenware will keep the butter cool.

Watery Potatoes—If potatoes are watery put a piece of lime about as large as a hen's egg in the pot and they will come out mealy.

To Remove Ink and Fruit-Stains—Ten grains of oxalic acid in half a pint of water will remove all ink and fruit stains. Wet the article in hot water, apply it to the top of the bottle so the liquid will reach it, then rinse it well.

How to Remove Dry Paint—Dry paint is removed by dipping a swab with a handle in a strong solution of oxalic acid and applying. It softens it at once.

To Remove Berry-Stains from a Book-Cover, Paper or Engraving—The fumes of a brimstone-match will remove berry-stains from a book or paper or engraving.

Something for the Ladies—Science has made a discovery of a new method of bleaching white goods. It is as simple as it is said to be efficacious and is vouched for by German chemists. It consists in dissolving one part oil of turpentine in three parts strong alcohol and placing a tablespoonful of the mixture in the water for the last rins-

ing. The clothes are to be immersed in this, well wrung out and placed in the open air to dry.

Japanese Cleansing Cream for Clothing—Castile soap, three ounces; ammonia, four ounces; ether, one ounce; spirits of wine, one ounce; glycerine, one ounce. Cut the soap fine and dissolve in one quart of water; then add all the other ingredients and bottle for use. This preparation will thoroughly clean and renovate kid gloves and the finest articles of wearing apparel and brighten their colors without the least injury to their texture, removing grease from clothing, etc.

To Keep Flies Away—No fly it is said will enter a room where wreaths of walnut leaves are hung. The experiment is worth trying.

How to Make Baking Powder—Take cream Tartar, five ounces; baking soda, two ounces; common starch, two ounces; mix. This is the composition of baking-powder sold by grocers.

Hair-Restorative—Castor-oil, five ounces; aqua ammonia, one ounce; tincture Spanish flies, one half ounce; alcohol, one quart; oil of lemon, oil of bergamot and oil of lavender, of each two ounces. Mix and shake well before using, every morning when the hair is falling. Keep the bottle well corked. If the hair seems dry and harsh and full of dandruff, wash the head with egg and rain-water before using the restorative. This will be found an excellent means of restoring the hair, as its use will attest.

PATENT MEDICINES.

Magnetic Pain Killer—Laudanum, 1 dr.; gum camphor, 4 drs.; oil of cloves, $\frac{1}{2}$ dr.; oil of lavender, 1 dr.; add them to 1 oz. alcohol, 6 drs. sulphuric ether, and 5 fluid drs. chloroform. Apply with lint, or, for toothache, rub on the gums and upon the face against the teeth.

Bay Rum—French proof spirit, 1 gal.; ext. bay, 6 ozs. Mix, and color with caramel; needs no filtering.

Balm of a Thousand Flowers—Deodorized alcohol, 1 pt.; nice white bar soap, 4 oz.; shave the soap when put in; stand in a warm place until dissolved; then add oil of citronella, 1 dr.; and oils of neroli and rosemary, of each $\frac{1}{2}$ dr.

Barrell's Indian Liniment—Alcohol, one qt.; tincture of capsicum, 1 oz.; oil of origanum, sassafras, pennyroyal, and hemlock, of each, half oz. Mix.

Cod Liver Oil—As usually prepared, is nothing more or less than cod oil clarified, by which process it is in fact deprived in a great measure of its virtue. Cod oil can be purchased from any wholesale oil dealer for one thirtieth part of the price of cod liver oil as usually sold, and it is easy to clarify it. Dealers might turn this information to good account. To make it more palatable

and digestible, put 1 oz. of table salt to each quart bottle.

Seidlitz Powders—Rochelle salts, 2 drs.; bicarb. soda, 2 scr.; put these into a blue paper, and 35 grs. tartaric acid into a white paper. To use, put each into different tumblers, fill one-half with water, adding a little loaf sugar to the acid; then pour together and drink quick.

Camphor Ice—Spermaceti, $1\frac{1}{2}$ ozs.; gum camphor, $\frac{3}{4}$ oz.; oil sweet almonds, 4 teaspoonfuls; set on the stove in an earthen dish until dissolved; heat just enough to dissolve it. While warm, pour into small moulds, if desired to sell; then paper, and put into tinfoil; used for chaps on hands or lips.

Nerve and Bone Liniment—Beef's gall, 1 qt.; alcohol, 1 pt.; volatile liniment, 1 lb.; spirits of turpentine, 1 lb.; oil of origanum, 5 ozs.; aqua ammonia, 4 ozs.; tincture of cayenne, $\frac{1}{2}$ pt.; oil of amber, 3 ozs.; tincture Spanish flies, 6 ozs. Mix well.

Green Mountain Salve—For rheumatism, burns, pains in the back or side, etc. Take 2 lbs. resin; Burgundy pitch, $\frac{1}{2}$ lb.; beeswax, $\frac{1}{2}$ lb.; mutton tallow, $\frac{1}{2}$ lb.; melt slowly; when not too warm, add oil hemlock, 1 oz.; balsam fir, 1 oz.; oil of origanum, 1 oz.; oil of red cedar, 1 oz.; Venice turpentine, 1 oz.; oil of wormwood, 1 oz.; vedigris, $\frac{1}{2}$ oz.

The verdigris must be finely pulverized, and mixed with the oil; then add as above, and work in cold water like wax till cold enough to roll; rolls 5 inches long, one inch in diameter, sell for 25 cents.

Cook's Electro-Magnetic Liniment—Best alcohol, 1 gal.; oil of amber, 8 ozs.; gum camphor, 8 ozs.; Castile soap, shaved fine, 2 ozs.; beef's gall, 4 ozs.; ammonia, 3 F's strong, 12 ozs.; mix, and shake occasionally for 12 hours, and it is fit for use. This will be found a strong and valuable liniment.

Magnetic Ointment—Trask's—Lard, raisins cut in pieces, and fine-cut tobacco, equal weights; simmer well together; then strain, and press out all from the dregs.

Black Oil—Best alcohol, tincture of arnica, British oil, and oil of tar, of each 2 ozs.; and *slowly* add sulphuric acid, $\frac{1}{4}$ oz. This black oil is coming into extensive use as a liniment, and is indeed valuable, especially in cases attended with much inflammation.

Brandreth's Pills—Take 2 lbs. of aloes, 1 lb. of gamboge, 4 ozs. of extract of colocynth, $\frac{1}{2}$ lb. of Castile soap, 3 fluid drachms of oil of peppermint, and 1 fluid drachm of cinnamon. Mix, and form into pills.

Davis' Pain Killer—Powdered guaiacum, 1 oz. and 2 drs.; camphor, 1 dr.; powdered cayenne pepper, 3 drs.; caustic liquor of ammonia, $\frac{1}{2}$ dr.; powdered opium, 15 grs.; digest these ingredients in 1 pt. alcohol for two weeks.

Fahnestock's Vermifuge—Castor oil, oil of wormseed, each 1 oz.; oil anise $\frac{1}{4}$ oz.; tincture myrrh, $\frac{1}{4}$ drachm; oil turpentine, 10 minims. Mix.

Swaim's Vermifuge—Wormseed, 2 oz.; valerian, rhubarb, pink-root, white agaric, of each $1\frac{1}{2}$ ozs.; boil in sufficient water to yield 3 quarts of decoction, and add to it 10 drops of oil of tansy and 45 drops of oil of cloves, dissolved in a quart of rectified spirits. Dose, 1 tablespoonful at night.

Ayer's Cherry Pectoral—Take 4 grs. of acetate of morphia; 2 fluid drs. of tincture of bloodroot; 8 fluid drs. each of antimonial wine and wine of ipecacuanha, and 8 fluid ozs. of sirup of wild cherry. Mix.

Radway's Ready Relief—According to Peckolt, is an ethereal tincture of capsicum, with alcohol and camphor.

Radway's Renovating Resolvent—A vinous tincture of ginger and cardamom, sweetened with sugar.

Ayer's Sarsaparilla—Take 3 fluid ozs. each of alcohol, fluid extracts of sarsaparilla and of stillingia; 2 fluid ozs. each, extract of yellow-dock and podophyllin; 1 oz. sugar, 90 grs. iodide of potassium, and 10 grs. iodide of iron.

Brown's Bronchial Troches—Take 1 lb. of pulverized extract of licorice; $1\frac{1}{2}$ lbs. of pulverized sugar; 4 ozs. of pulverized cubebs; 4 ozs. pulverized gum arabic; 1 oz. of pulverized extract conium. Mix.

Artificial Cream—Take milk, 8 tablespoonfuls; sugar, $\frac{1}{2}$ lb.; corn-starch, 2 ozs. Dissolve the sugar first in a pint of water, then add the other ingredients and sufficient water to make a quart of the whole. This will be found an excellent substitute for cream.

To Clean Ladies' Black Dress-Goods—Take common lager beer and with a sponge or black cloth rub it on the right side of the goods; then iron on the wrong side. This process will also stiffen the goods and render them as glossy as when first purchased. A cheap and very convenient recipe for making old dresses new.

Chemical Erasive Soap—Glycerine, 1 oz.; sulphuric ether, $1\frac{1}{2}$ ozs.; alcohol, $1\frac{1}{2}$ ozs.; aqua ammonia, $1\frac{1}{2}$ ozs.; dissolve one and one-half ounces of castile-soap in two and a half pints of hot water and add to the above. This will remove every particle of grease, from all kinds of cloth. It should be applied with a sponge or cloth, after which the garment should be sponged or rinsed with water.

Shilo's Consumptive Cure—Hydrochlorate morphine, 4 grains; oil peppermint, 10 drops; oil tar, 1 fluid dram; dilute hydrocyanic acid, 1 fluid dram; chloroform, 2 fluid drams; powdered extract licorice, 2 drams; tincture lobelia, 4 fluid drams; alcohol, 1 fluid ounce. Syrup to make 1 pint.

King's New Discovery—Sulphate morphine, 8 grains; fluid extract ipecac, $\frac{1}{2}$ dram; chloroform, 60 drops; tincture white pine, 2 fluid ounces; carbonate magnesia, $\frac{1}{2}$ ounce; sugar, 14 ounces; water, 7 fluid ounces.

Green's August Flower—Rhubarb, 360 grains; golden seal, 90 grains; cape aloes, 16 grains; peppermint leaves, 120 grains; potassium carbonate, 120 grains; capsicum, 5 grains; sugar, $\frac{1}{2}$ pound; alcohol, 3 ounces; water, 10 ounces. Macerate the mixed drugs in the water and alcohol, filter, and pass sufficient diluted alcohol through the filter to make one pint, in which dissolve the sugar.

Jayne's Expectant—Syrup squills, 2 ounces; tincture tolu, 12 drams; tincture camphor, 1 dram; tincture lobelia, 1 dram; tincture digitalis, 2 drams; laudanum, 4 grains; powdered ipecac, 4 grains; tartar-emetic. Mix together.

Carter's Little Liver Pills—Podophyllin, $1\frac{1}{2}$ grains; aloes (socotrine), $3\frac{1}{2}$ grains; mucilage acacia, sufficient quantity. Mix. Divide into 12 pills, and coat with sugar.

Sage's Catarrh Remedy—Half an ounce of a green powder consisting of 200 grains of finely powdered common salt mixed with 8 to 12 grains of powdered camphor, the same quantity of carbolic acid, and colored with a mixture of 20 grains finely powdered yellow puccoon root with 2 grains of indigo.

Warner's Kidney and Liver Cure—Liverwort, 1 ounce; powdered salt-petre, 320 grains; water, sufficient; alcohol, 2 ounces; glycerine, $1\frac{1}{2}$ ounces; essence wintergreen, 40 drops.

Pierce's Pleasant Purgative Pellets—Each little bottle contains 28 to 36 small sugar-coated pills of unequal size, weighing in all 18 to 22 grains. Their cathartic effect is solely due to podophyllin, the resin of the root of the May-apple.

Pierce's Golden Medical Discovery—Seven fluid ounces of a dark brown liquid consisting of a solution of 1 dram extract of lettuce, 1 ounce of honey, $\frac{1}{2}$ dram tincture of opium in 3 ounces of dilute alcohol, and 3 ounces of water.

Pierce's Favorite Prescription—Ten fluid ounces of a greenish-brown turbid liquid consisting of a solution of $\frac{1}{2}$ ounce of sugar and 1 dram of gum arabic in 8 ounces of a decoction made from 2 drams of savin, 2 drams of white agaric, $1\frac{1}{2}$ drams of cinnamon, and 2 drams of cinchona bark; to this mixture are added $\frac{1}{2}$ dram of tincture opium and $\frac{1}{2}$ dram of tincture of fox-glove, and a solution of 8 drops of oil of anise seed in $1\frac{1}{2}$ ounces of alcohol.

Hood's Sarsaparilla—After a careful analysis of this remedy it is believed that it does not differ materially from similar preparations.

Hamlin's Wizard Oil—Tincture camphor, 1 ounce; aqua ammonia, $\frac{1}{2}$ ounce; oil sassafras, $\frac{1}{2}$ ounce; oil cloves, 1 dram; chloroform, 2 drams; turpentine, 1 dram; alcohol, $3\frac{1}{2}$ ounces.

Sozodont—Castile soap, 75 grains; glycerine, 75 grains; alcohol, 1 ounce; water, 5 drams; oil peppermint, oil cloves, oil cinnamon, oil anise, of each sufficient.

Kennedy's Medical Discovery—Sneezewort, 1 ounce; bitter root, 4 drams; liquorice root, 4 drams; white sugar, 4 ounces; essence wintergreen, 1 ounce; boiling water, 8 ounces; proof spirits 10 ounces. Macerate the roots with menstruum for 48 hours, filter and add sugar.

Mexican Mustang Liniment—Petroleum, 2 ounces; crude oleic acid, $\frac{1}{2}$ ounce; ammonia water, 1 ounce; naphtha, $\frac{1}{2}$ ounce; brandy, 1 dram.

St. Jacob's Oil—Gum camphor, 1 ounce; chloral hydrate, 1 ounce; chloroform, 1 ounce; sulphuric ether, 1 ounce; tincture opium, $\frac{1}{2}$ ounce; oil origanum, $\frac{1}{2}$ ounce; oil sassafras, $\frac{1}{2}$ ounce; alcohol, $\frac{1}{2}$ gallon.

THE TREATMENT AND CURE OF DISEASE

AND THE

PRESERVATION OF HEALTH

Without the Use of Medicine.

The object of this article is to teach the sick and afflicted how to apply what experience has taught to be one of the most simple and effective methods yet discovered for curing many of the worst forms of disease without the use of medicine. It consists in cleansing the stomach and alimentary canal or intestines.

In order that those who have no knowledge of the anatomy of the human system, may fully understand what is to follow, we will say that when the food that has been taken into the stomach leaves that organ, it first passes into the small, then into the large intestines or colon, after which the refuse passes from the system. If the stomach always digested its food properly, no trouble would arise and the conditions would be different, but through the abuses of the laws of nature, the stomach is often rendered incapable of properly performing its function, and the food instead of being properly digested and prepared for assimilation, is left in the stomach in a fermented and decayed condition, and as such passes into the intestines where the absorbent vessels take up this food in its poisonous condition and it is carried through the blood, deranging every organ of the body.

On considering the colon, we find it acting as a sewer, or receptacle for the waste matter of the system. If the calls of nature were promptly attended to, these accumulations would, as a rule, only remain a few hours in the colon; but with man, business, etiquette and a hundred other excuses causes a postponement of nature's calls. From this, as well as from some other causes, this fecal matter with its impurities, is kept in the colon and constipation ensues.

And here again as above, the absorbents are at work taking up and distributing through the system, impurities, while the dried and heated fecal matter clogs in the folds of the colon, forming a crust to which other accumulations are added, until the colon is almost filled with hard putrefying matter, which remains for months and sometimes years, leaving only a small opening in the centre through which nature forces a passage.

Many suppose that because they have daily movements of the bowels, however slight, that they are free from constipation, whereas they have this affliction in its worst form, with the colon incrustated on all sides with impacted excrement of long standing, with only a small central channel, as before stated, for a daily discharge.

Dissections have been made of persons who had died from disease engendered from constipation, and in some instances from constipation itself, where the colon was found to be impacted with fecal matter that had become almost as hard as wood.

This condition of the system gives rise to a greater variety of diseases than is generally supposed. If space permitted, it could be easily explained how this disastrous condition of the system is the prime cause that produces a very great variety of the worst forms of human maladies.

To overcome these diseased conditions, two results are to be accomplished, viz.: that of removing the impurities from and cleansing the colon,

and also the stomach. In the process of purifying the colon, we skip the small intestines as we can not directly reach them. But when the stomach and colon are purified, the small intestines will take care of themselves, for the bile, acting as an antiferment, is received at the upper end of the small intestines.

TREATMENT:—Inject into the colon by means of a syringe, very slowly, water as hot as can be borne, the hotter the better, so long as it can be used with comfort—tepid water should not be employed. It may not be possible to retain but a little at the beginning. In this event the first water may be allowed to pass off, repeating the operation, each time increasing the quantity and using all the will power possible to retain it. It must be borne in mind that it is the quantity that is to effect the good result. The object sought to be accomplished is to fill the entire colon with pure hot water, so that the dried putrid excretion that is lodged in the folds of the colon, is loosened and thoroughly washed out. Use from two to four quarts at a time and repeat every day for at least a week, then less frequently until the desired result is accomplished.

A much less quantity than the above named would not suffice, as the large intestine, which is capable of great expansion and may be cultivated to receive and retain as much as a gallon of water at a time, requires a considerable amount to insure thorough cleansing.

Different positions of the body have been recommended while using the injection. Lying on the left side is one. Another is on the knees, hips up and the chest as low as possible. After a pint of water has been injected, especially if hard to retain, stop the flow for two or three minutes, and with the hands gently knead the bowels. This will break up the adhesions of fecal matter in the intestines, and cause it to fall into the current as it passes out. Continue the injection until two or more quarts of water have found its way into the intestines, then lie still from ten to fifteen minutes, after which pass the water off. Increase the heat and quantity of water if possible from day to day for a week or ten days, until three or four quarts can be retained, then wait six to eight days and see if the bowels will move naturally; that the excretion is of a soft, pasty, natural consistency, and yellow in color. If this is the case, the colon is empty, but if the bowels are inactive and the excrement hard and constipated, then the colon has not been emptied and it may take from one to six weeks longer to accomplish it, or get the hard incrustated matter removed.

The best time to use it is just before retiring at night; then after the water has passed off, rest twenty-five or thirty minutes, then inject a pint or more which retain during the night. This water will be absorbed by the organs of the system during the night, producing a very cleansing and salutary effect, all of which will insure the return and preservation of health. The victims of insomnia during this process will be visited by "tired nature's sweet restorer, balmy sleep."

The method of washing out and cleansing the stomach is to sip, from thirty to sixty minutes before each meal, nearly or quite, a pint of hot water, as hot as can comfortably be used. At first it may seem disagreeable, but after a few trials it will be taken with a relish, as it acts as a stimulant. The hot water will loosen the mucus from the lining of the stomach and in half an hour this mucus and the undigested particles will pass out with the water into the intestines, leaving the peptic glands cleansed and prepared to digest the food.

This cleansing of the stomach, by hot water, should be employed by all patients that it agrees with, after a few trials have been employed as a test.

This method of hygienic treatment, perseveringly followed, has arrested some of the most malignant forms of consumption and enabled the victims of that terrible disease to live out their three score and ten years, when they had not even one whole lung left to depend on for the support of life. The disease too was not only arrested, but the weight of the patients was increased from fifty to seventy-five pounds.

ON THE TRAINING OF CHILDREN.

HOW TO TRAIN CHILDREN THAT SHALL BE AN HONOR TO THEIR PARENTS.

Children are sent to school to acquire knowledge, but the training and developing of the coming man or woman belongs to the home. The school teacher may fill the child's mind with more or less useful information and sometimes the church and Sunday school may aid in the formation of character, but all these are of little ultimate account in bringing the child into the inheritance of power it is entitled to, unless the parents have performed the duty toward that child which God and nature and society require at their hands.

When Parental Training Begins. It may be laid down as a fundamental fact that the real influence of the parents over their child begins a year or more before its birth. To bring a child into this world thoughtlessly is a crime first against that child and second against society. The parents' and more especially the mother's thoughts and habits for at least three months prior to conception of the child, directly molds or modifies the essential character and possibilities of that child. This is now a fact so well established that it needs no argument. It is therefore just to insist and to repeat most solemnly to all prospective parents, that the training of children begins at least a year before their birth. Never for one instant should they lose sight of this fact or forget their responsibility. The well-known historical case of Cardon, the criminal, is a terrible evidence. Both his parents were moral, highly respected citizens. But the boy was an unwelcome child and during the conceptional period the mother was cross and constantly wishing she could destroy the foetus. After birth she found she loved the child, but could not control him. He became one of the worst of criminals and the father of other criminals. It is a fact beyond dispute that children who are not loved before birth are very seldom affectionate, companionable or agreeable.

The mother, by keeping her thoughts, hopes and aspirations constantly and persistently upon high and noble things during pregnancy, can largely influence the character of the future child. Napoleon's mother, during the month preceeding his birth, became intensely interested in the struggle of her native island for freedom. She became thoroughly imbued with the thought of warfare and the desire for conquest. She thought of little else than conquering the enemy who had invaded Corsica. Napoleon was the natural outcome. The mother of Rubens, the painter, received a picture that wonderfully interested her, and all though her pregnant period she thought of pictures and wished for art and the power to depict scenes and faces. Thus she gave the suggestion to her coming son, while he was being formed within her; that developed into the great artist. And so every woman may give to her expected child the greatest education and training of its life through ante-natal suggestion.

After birth the nursing infant drinks in, with its mother's milk, many lessons or influences that affect its entire future life, either for

weal or woe. Anger, irritability, nervousness, peevishness, pugnacity and other kindred evils, or on the other hand, courage, even temper or happy dispositions are awakened in the child's mind and stimulated, from the mother's inner life through the life-giving fluid flowing from her breasts.

Paramount Influence of the Mother. There can be no question but what the mother's influence and therefore her responsibility is paramount, at least during the earlier years of the child's life. No one can possibly be as close to the child as she of whose life, of whose very flesh and blood, the child is a part. No one can ever be to the child what the mother is, and any child that is deprived of a mother's tender, loving, constant care or is consigned to the more or less frigid attention of a nurse or a relative, is robbed of its legitimate birth-right, is denied what Heaven intended it should have, and no possible excuse of expediency can absolve the mother from this plain God-given responsibility. The father is perforce absent during all or the greater part of the day. For the mother to be absent is a sin. If she absents herself voluntarily it is her own sin. If force of circumstances necessitate her absence it is the sin of others. During the tender years of infancy the child has the first and the greatest claim upon the mother to which all other claims should yield.

Essential Points in Deciding What to Do. All true parents feel more or less anxiety over the proper rearing and training of the children that come to them. They often feel their inability to decide just what to do to secure what every parent desires, intelligent, healthy well-behaved children, capable of holding their own among their fellows. And if the suggestions that follow, pointing out a few fundamental principles and repeating the results of many years practical experience and observation, prove helpful to any parents they will have accomplished the purpose intended. It would be absolutely impossible to lay down a set of rules to govern the management of children, for a rule that applies to one will not necessarily apply to another. The essential thing is for the parent to have a clear understanding of the child mind, of the objects he desires to accomplish in the rearing of the child and of the general principles that underlie his personal relations to that child.

First Principles in Child Culture. The first essential thing for the parent, and especially for the mother, to do is to place himself or herself in perfect harmony with the child. The child cannot be expected to approach the parent. The child's mind and soul are simply open to impressions. The relations of grown people require mutual concessions to obtain harmony, but with the child this is obviously impossible. The approaches must *all* be from the parent's side. The parent must make all the advances in the most loving spirit, and when this is done honestly and *unreservedly* the child will *always* respond. This "bond of sympathy" is really the first requisite to the successful training of the child under any and all circumstances. It must be remembered that the child does not reason, it *feels*. And if there is any

antagonism or anger or dislike in the parent's heart, he may act ever so kindly and lovingly, the child will *feel* the contrary, and the parent's influence over that child is correspondingly small. This applies throughout the entire life of the child from its earliest infancy to maturity and beyond.

The parent who wishes to bring up his or her child well, must first of all be the child's most intimate and most confidential companion. Get close to the child, be a child with it, enter into all its natural joys and sorrows, be its *best* friend in that intimate way that knows not, nor even thinks of, any secrets between them on either side. Make an honest, loving, persistent effort in this direction until you gain the absolute, unquestioned confidence of the child, and its proper training becomes comparatively easy, there is scarcely a limit to what you may accomplish with the child, and your own reward will be greater than you will believe possible if you have never experienced both the persistent, confident effort and its result. It is never too late to begin this though it may become harder the older the child is ere you begin. A mother who came to the Child Culture Society, overwhelmed with grief over her wayward son, a bright, active boy of ten years, was asked over and over again to seek to win the child's heart.

"Oh," she said, "the child loves me and I love him well enough."

But, it was persisted, do you make a confident of him as you once did of the most intimate and best friend you ever had in your school days? The mother was silent. After days of talking, and on her part of watching the care given to other children, she agreed to try the new plan, entering into her boy's inner life. In two weeks she returned, her face beaming. "My boy's all right now. I can hardly believe how he has changed and I'm so happy." She had simply discovered the fundamental rule underlying all training, and especially the training of children.

How to Compel Obedience. "That child simply won't mind no matter what I do," is perhaps the most common complaint of parents in this or any other land. It is heard in every family where there are children, at some time or other, and its cause is not far to seek. The parent usually begins by giving arbitrary commands,—some of which it is not expected that he will obey—and so nullifies the child's natural respect for parental authority. In the first place, then, the parent should be very careful indeed in giving commands or making requirements of the child. Never order it to do a thing simply because you want it to do so. This is perhaps the most common and most serious mistake made by parents in the training of children, for incidentally, and many parents are surprised and some indignant at the suggestion, but, nevertheless, it is true, incidentally they thus teach the child to be dishonest and untruthful. We should always remember that the child is a free spirit requiring to be taught, not a servant to obey orders. Hence, to teach it obedience it must first be shown why we give any certain command, and the reason must be a good, or, at least, a plausible one.

"Oh!" said Mrs. A—"if the child picks up a sharp knife !

musn't order it to drop it quick." No, the true parent will have shown the child the danger of handling sharp knives before it is possible for the child to pick up one. Then when it does take the knife, the parent will watch it closely, but rather permit it to cut itself than to interfere with a command. The cut will not hurt the child half so much as the sharp command hurts its little mind. This is also a fundamental principle, namely, to permit the child to learn, wherever possible, by experience, provided the lesson comes naturally and the child has first been taught. The instances possible, where this principle can be applied, are so numerous that a volume could easily be written on this subject of teaching obedience by natural means alone. The normal child will always obey a law it really knows. Therefore teach it, both by precept and example, every law that you expect it to obey. You have no right whatever to make it obey merely your will. The child is not a slave. Try the new way and you will never return to the old.

Teaching Children to be Truthful. All normal children are by nature truthful. Most parents teach their children, wholly unintentionally, and entirely unconscious of the fact, yet really do teach their children to be untruthful. Hence the matter might be stated, how not to teach a child to be untruthful.

Usually one of the first lessons in falsehood which parents teach their children is to say to them in a moment of irritability: "Now, don't do that again or I'll whip you." Five minutes later the child does it again, but no whipping follows. We have personally seen in some good families, where we had the chance to watch mother and child (two year old) and keep tab on results, instances where fifteen to twenty falsehoods of this and similar nature were told the child in one hour. Is it any wonder that such a child becomes a liar? The wonder is that he remains as truthful as he is.

How natural it is for a mother to say, when her child asks where the baby came from, "he came from the sky," or, "the doctor brought him in a basket," etc. Why not tell the child the truth instead of permitting him to learn afterwards that mother or father told him a fib. Or, if so very young that he could not comprehend it (which we doubt very much) why not say: "I do not wish to tell you now, my child, but some other time I will tell you all about it—it is very wonderful." Again when you have thus, or in any other way, given your word to your child keep it as sacredly as the most sacred obligation of your life. To punish a child for being untruthful is only to tempt him to become more untruthful in order to avoid being found out. This is a case wherein example is almost everything. The only punishment we have ever known to be effective was the giving to the child some object lesson or lessons demonstrating that untruthfulness does not pay. When the child comprehends this fact it will check its habit of false statement. Nothing else will do it permanently.

How to Make a Child Honest. Every child is honest unless he is taught dishonesty. Some children are taught dishonesty before

they are born. This is a grievous wrong. The mother who rebels against the coming of the child and acts dishonestly during pregnancy or permits her mind to dwell on thoughts of dishonest actions, is teaching her coming child, unwittingly to be dishonest. The parents who promise their little children things and who do not fulfill the promise, or, who take away, without the child's consent, anything that has been given to the child or that the child has found and imagines to be its own, teaches that child dishonesty. It is child nature to seek redress for what it considers wrongs, to retake what it believes has been taken away wrongly.

Parents often, though unintentionally, teach the child dishonesty by arbitrary punishment for childish action. The child naturally thinks that everything within its reach is its own. It requires long and patient instruction to acquaint the child with the limitations to what it may consider its own. To teach a child honesty it is first necessary to be absolutely honest with the child. The surest way of teaching a child to be dishonest is to suspect him and let him know that you suspect him. This should never be done under any circumstances as it serves to break down the child's self-respect and sense of honor. It violates a fundamental law. The surest way to teach honesty is to trust the child without reserve. We have known numerous cases of habitual dishonesty entirely cured by first showing the child the uselessness and the "bad policy" of dishonesty and then putting him on his honor and trusting him fully. In severe cases this may have to be repeated a number of times. To whip or otherwise punish the child is worse than useless, for punishment makes the child feel as if it expiated its wrong or paid for it as it were, and can do it again and pay for it if found out, and besides develops cunning and provokes lying in order to escape being found out.

Punishments that are Injurious. Any punishment that tends to shock the child is harmful and should be banished from the home. To put a sensitive child into a dark closet is cruelty. To whip one of frail physique is a mistake. There are very few cases indeed in which whipping does any good and then only because we are not wise enough to use far better punishments.

The Sin of Scolding. Perhaps the most injurious, as it is the most common, mode of punishment is by scolding. Nothing so quickly breaks down the parent's natural authority over the child as does scolding. And nothing so surely kills affection as scolding. "Johnny stop that," or, "Now Mary there you are again, what did I tell you?" or, "Willie, you naughty little wretch, see what you've done;" and kindred expressions, are the curse of childhood. They are a relic of barbarism and the extent to which they are used in any family indicates very closely how far that family has progressed towards the culture of the best families. It is needless to add that in the homes of cultured people such expressions are never heard. If you wish your children to grow up to be well-behaved, gentlemanly or ladylike, never under any circumstances speak to them otherwise than

in gentle tones and with kind words. Children learn very much more, and much more easily, from example than from precept.

How to Develop Habits of Industry and Economy.—

Some children are naturally industrious and some are naturally economical. Others are the opposite. The training that would fit one class would not apply to the other. But all children, rich or poor, should be taught habits of industry in early childhood. Fortunes change and no parent is certain that his child will not some day be thrown upon his own resources with the world against him. Therefore it is the right of every child to receive such teaching in early life that he may be fortified in the case of reverse of fortune.

Habits of industry and economy are best taught by making the child responsible for its own playthings; responsible for the care of its room; responsible for a bed of flowers, or vegetables, or chickens, or any other practical thing, permitting him to reap all the reward possible and also to endure all losses possible without any direct interference by the parent. Giving money or other valuables to children without a corresponding responsibility is a wrong to the child from the educational standpoint. All children should be taught the use of money by giving them definite sums for definite purposes, some of which at least are for necessities, and then compelling the child to do without the necessities in case he foolishly spends this money otherwise. Every parent should plan out a course of little experiences of this kind for his child and rigidly adhere to it.

How to Teach a Child to be Unselfish. No one likes a selfish person, yet many very selfish persons owe this disagreeable trait to erroneous education in the home. Training in this direction must begin at the earliest period, even in the cradle. In the cradle the infant's needs should be anticipated, but never yielded to simply because of cries or whinings. A young child should be taught, by judicious distribution of those marks of affection which it most appreciates, that it pays better to be helpful to others than to demand help from others. Caresses for every unselfish act of the child, and a sure withholding of loving attention for every selfish deed, is the surest and best training for the young child. The surest way to teach selfishness is for the parent to yield to all the physical and other demands of the child under the mistaken idea of being "good" or "loving" to that child. Such a parent is neither good nor loving, for love desires the child's real good, not the gratification of its passions or momentary desires.

How to Control Fits of Anger. Many children are given to fits of temper or exhibitions of extreme anger. In many cases these are due to some physical trouble with the child, which should always be sought for and if possible removed. We have known children who when denied something very much desired would throw themselves upon the floor and kick and scream with might and main, even sometimes to the extent of doing themselves or others near at hand bodily injury. And of all the many remedies tried for this error we have

found none so efficacious as the utter ignoring of the fit by all the family. Let the child kick and scream. If it finds that no one seems to care at all, that it does not even receive a reproof of any kind, it soon becomes ashamed. A very few results of this kind will break up the worst fits of temper ever known. Try it.

Injurious Effect of Threatening a Child. Among the most serious mistakes made by parents is the very easy error of threatening the child with this or that consequence, if they do so and so, and then seldom or never carrying out the threat. We have known parents who issued threats upon threats and finally exclaimed, "Now, if you do that again I *will* whip you," and even then upon the child's doing again the same offense but in a milder fashion, neither whip nor otherwise punish the child. When we know the child's imitative nature and his aptitude to follow example, we can understand how fearfully injurious such threats must be. They not only serve to seriously lessen the child's respect for, and by and by love for its parent, but teach it to have disregard for the truth. They teach it slovenly habits of thought and careless manners; for where respect for law is lessened respect for order decreases.

Another grievous error is that of promising a child certain things for the future and then either forgetting the promise or changing one's mind. A parent has no right to do either, as he has no right to teach his child lying. A promise to a child should never be lightly given, but when given should be considered just as binding as a financial obligation at the bank.

How to Control a Spirit of Mischief. Mischievous children are by no means scarce, especially in the cities, and they cause their parents much grief and trouble. As a general thing mischief is a sign of an active mind that is not given as much occupation as its natural instincts demand. While many parents deplore such a spirit in their children they would, if they were wise, feel thankful for it, and immediately begin to study how best to turn that child's unusual activities into a useful channel. We know of several instances where exceedingly mischievous boys, who were the terror of the neighborhood, and caused their parents much worry and no little expense in paying for destructive pranks, have been entirely cured by giving them a gymnasium outfit and a room in the barn where they could invite their fellows to practice with the implements provided. In other cases cures were effected by securing them employment where they earned wages, either at home or with a neighbor or in some store, office, or other place, as errand boy, messenger or something the child was old enough to perform. If still attending school, some work like delivering papers or making gardens, or shoveling snow, anything that was useful work and for which they received definite pay for their own use.

How to Overcome Fear in a Child. Some children are troubled desperately by fear. They are afraid of the dark and of a hundred other things, and this fear not only causes them much need-

less suffering, but often endangers health and life itself. The best method for overcoming this fear is for the parent to accompany the child into some one of the worst of the conditions producing this fear and there telling the child about God, about His presence there and everywhere all the time, that absolutely nothing happens without the will of God, and reasoning upon this and similar topics until trust takes the place of fear. A few repetitions of this, and advising the child to try spending a few minutes alone in some very dark fear-y place, will suffice. But on no account should the parent ever seek to compel the child to go into the dark or fearsome place. Reason with it patiently until it is willing to go of its own accord.

To Overcome Vanity in Children. The very reprehensible habit of praising the child before visitors, commenting upon its pretty clothes or pretty appearance or behavior, is probably the foundation of more vanity and more selfishness than any other one thing. When a spirit of vanity has thus been cultivated in a child, it is hard indeed to repair the mischief. Vanity has become a part of its mental make-up, and it almost needs to be born again to get rid of it. It will be a handicap throughout life unless the parents begin early to eradicate the evil by systematic cultivation of unselfish feeling and training of the intellect and heart by the reading of good books and association with unselfish and broad-minded people.

How to Teach a Child Courage. Some children are by nature timid and need to be taught courage and self-reliance. One parent of our acquaintance, whose son was very timid and unassertive, came home from school twice with the complaint that some companion had pitched upon him and pounded him. "Now," said his father, "I have bought a 'blacksnake,' and next time a boy pounds you I will give you a severe whipping with this. I don't want you to invite attack or pick a quarrel, but if any boy insults you or strikes you I want you to pitch into him and whip him." He had no further complaints from the son, who grew up to be a self-reliant, courageous young man.

The Parent's Obligations. In conclusion we desire to call the reader's attention to the fact that while a mutual obligation exists, namely, the obligation of the child to the parent and of the parent to the child, as it is recognized in the law of the land, still ethically considered the first and greater obligation rests with the parent. The child had nothing whatever to say about its coming into the world; the parents did. The child is wholly ignorant of the ways of life and the demands of society. The parents have both knowledge and experience. The child is by right entitled to inherit a healthy body and clean mind and suffers from the lack of these through no faults of its own. Hence it seems to be the parent's natural duty to use every intelligent effort to enable his child to reach manhood or womanhood with a sound body and a clear, clean, well-informed mind. Very important as a religious education must be, for we cannot forget that the child also has a spiritual nature to be cultivated and developed.

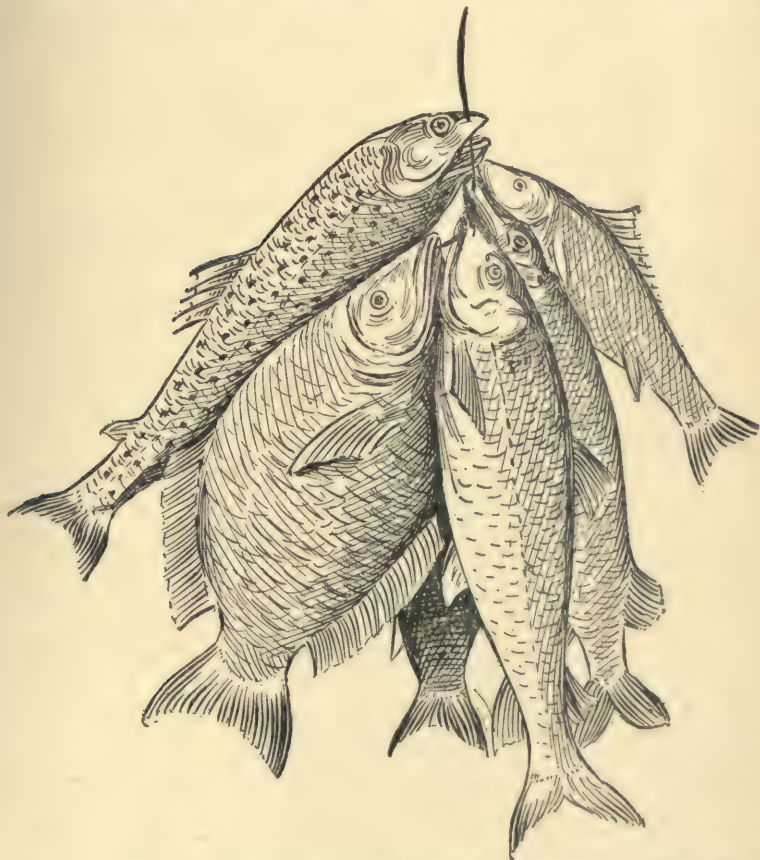
yet we consider that the former—the sound body and healthy mind—are of even greater and more imperative import. The indulgence of a child's appetite, under the erroneous idea that the parent's love for the child can not bear to deny the child what does not seem so very hurtful at the time, is really the same as slowly poisoning the child; it is laying the foundation for future dyspepsia and ailments and oftentimes premature death. True love would never, knowingly, be guilty of such a deed. It would rather sacrifice its own inclination to give the child present pleasure in order to secure its future welfare.

So, too, in teaching the child by example in the many duties of everyday life; in kindness, in gentleness, in politeness, in the use of good language, in tidiness, in the formation of habits, in cheerfulness, good nature, helpfulness, thoughtfulness for others, in all the higher and more desirable phases of life, the parents' duty is absolute. The future of the child, his capability in life, his happiness and his success, depend very largely upon the training he receives from his parents. If the child adopts bad habits from its companionship with other boys, it is the parent's fault if he does not use means to counteract it. And this is best done by forestalling the danger in teaching the child beforehand in regard to these evil habits. Secret vice will never be followed by boys whose parents have taught them all about it and its terrors before they can learn it from their fellows without hearing of its evils. Profanity can be largely prevented by teaching boys the folly of such language and insisting that they say "potato" or some equally silly word, every time they feel tempted to use a profane word. This was Prof. Wm. Waldron's method of teaching boys to avoid profanity and it proved effectual. In all the follies of mind and heart the boy's best safeguard is knowledge, imparted in the way of information, by the parents, *before* this information can be gained on *the streets* or from other boys.

FISH.

Why Fish is Sometimes Injurious and Dangerous —When Fish is Wholesome—How to Tell Whether Fish is Good or Bad— Different Ways of Cook- ing Fish.

Fish is one of the most nourishing and healthful as well as one of the most appetizing of flesh foods. But it is so only when the



natural conditions that make it good food are observed. When this is not done, and it quite often is not done because people are unacquainted with the danger, fish becomes an injurious and often even a poisonous article to take into the stomach because it is now well recognized that

stale fish produces ptomaine poisoning, a fruitful source of disease. Many a case of dyspepsia or weak stomach, numerous fevers and chronic ailments owe their origin to the action of this slow-acting and wholly unsuspected poison taken into the system by eating fish that were not in a suitable condition for food.

What Constitutes Wholesome Fish.—Fish that is eaten immediately after, or very soon after, it is caught is nearly always healthful and nutritious. The exceptions are when the fish are afflicted with some disease, which is rare but is known to occur, or when the fish have been living for some time in water that is made foul by sewerage or other impurities. Fish caught in lakes or in streams of running water are good and wholesome. The flesh of fish contains more phosphate than any other meat and hence it is of great value to add from time to time to the dietary. Its wholesomeness is attested by the splendid physical health and strength of the fishermen on the coast who are compelled to subsist almost wholly on fish. In spite of their poverty and hardships they are strong and robust.

How to Prepare Fish for the Table.—By all odds the best way to prepare fish for eating is the old Indian way of baking it in a cover of fresh clay. The clay keeps in all the natural juices and oils of the fish as well as the delicate flavor that makes it so appetizing. One reason why fish baked in the ashes at a picnic tastes so good is because the ashes serve to preserve or prevent the escape of the true fish flavor. When baked in the oven, or when boiled and especially when fried, all or nearly all of this delicious flavor escapes into the air. Try the other method and you will be surprised at the difference. The coat of clay is put on over the scales which come off with the clay when broken open. The next best method is to bake the fish in a closed pan in a tight oven. Then follows broiling, boiling, frying and other more complicated methods of preparing and serving fish.

When Fish is Not Fit for Food.—The flesh of fish being softer than the flesh of animals, it decays more rapidly. Besides the fish passes its life in the water which contains much less oxygen than the air, hence when taken into the air the oxygen attacks the muscular portions and starts decay in them very quickly after the fish is dead. This partly decayed muscular tissue, if taken into the stomach, acts as a slow poison and is the cause of a great deal of dysentery and other troubles. Fish should be killed as soon as taken out of the water, by driving an awl into their heads or by cutting off their heads. They should never be allowed to die. They are no more fit to eat when they have died a slow, lingering death by suffocation than is a steer or a sheep or a chicken that has perished in the same manner. When a fish is not to be eaten as soon as caught, it should either be kept in water or else frozen. Freezing does not kill fish. If carefully and gradually thawed out they will swim away as if nothing had occurred, and they may be kept a long time in this frozen state.

How to Tell Fresh Fish from Stale.—Fresh fish may be recognized first by the firmness of the flesh and bright sheen of the

scales; second, by the eye; if this is full and clear, not sunken or lustreless, the fish is doubtless a fresh one. If the eyes are sunken, or if the flesh is flabby and especially if the scales show a tendency to come loose or drop out, such fish are by no means suitable for food and the person who eats of it takes great risks. The germs of decay in the flesh of fish are not destroyed by the heat of cooking and if taken into the stomach are likely to become lodged and breed colonies of germs that some day will cause serious trouble.

Cooking Fish Alive.—The very cruel and wholly unnecessary custom of cooking live lobsters owes its origin to the many cases of serious disease and not a few deaths that occurred in times past through eating the meat of lobsters that had been dead for some hours in warm weather. Lobster, and indeed all shellfish, decays more rapidly than any other of the fish family, and when decayed is especially harmful. When people became aware of the danger in stale lobsters they went to the other extreme and demanded that they should be put on the fire alive. All humane cooks, of course, first kill them and immediately after put them on to cook. It would be much better for peoples' health and it would greatly add to the enjoyment in eating fish if the custom of keeping them alive till ready for cooking should be generally adopted.

EGGS.

Most Nourishing of Foods—Danger in Eggs—How to Tell Fresh Eggs—How to Preserve Eggs, Government Process—Canned Eggs —Dried Eggs—How to Utilize Spoiled Eggs.

Eggs are not alone the most common and most universally used of animal foods, but they are the most wholesome and the cheapest. They are eaten in all countries and by almost all classes of people, and they contain every element of food needed by man. No general estimate of the total number used in a year has ever been made with any approach to accuracy, but it is known, for instance, that New York City uses about two million (2,000,000) eggs daily, and it is supposed that other cities use a proportional number according to their size. But how many are used throughout the country districts can hardly be estimated. England, besides the large number of eggs produced by British hens, imported during 1899 1,970,000,000 eggs in the fresh state, besides an unknown number in the shape of canned eggs for certain bakeries and for tanners, and a considerable amount of egg flour and of so-called "crystalized" eggs. The largest egg dealers

estimate the number of eggs laid yearly in the United States at about fourteen billion (14,000,000,000).

Danger in Eggs.—Eggs may become a source of considerable danger to the health of persons eating them either in the natural state or mixed in with other foods. In the latter, especially, the danger is an insidious one, as the cause of the troubles which follow is wholly unsuspected. When the yolk of the egg begins to decay it generates a poisonous gas which, if taken into the system, causes disturbances that may not be noticed at the time, but which subsequently cause serious gastric complaints. The only safe way is to dispose of eggs that lack the requisite freshness to the canning or fertilizer factory or throw them away.

How to Tell Fresh Eggs.—Fresh eggs are not necessarily fresh laid eggs. It is possible to keep eggs four or five months or longer, so that at the end of that period they are fresher than some eggs only four or five days old. If an egg is taken from the nest immediately or very soon after it is laid and is kept in a cold place in an upright position it will remain fresh and perfectly good for a long time. In testing an egg various processes may be used, the most common being that of "candling." This requires simply a long paper funnel just large enough at the small end to admit an egg, and large enough at the other end to cover the face. When so held that the egg is between the eye and the bright light of a candle, or lamp, or electric light, the egg in which decay has begun, ever so little, will show a dark spot; the fresh egg will be perfectly clear. Other methods of proving whether an egg is fresh or stale may be found on page 281. In buying eggs avoid the washed egg, for washing opens the pores and lets the air in, which tends to spoil the egg. Avoid also the shiny egg. This has either been set on by the hen, or has been kept too long in a warm place. A fresh egg is never glossy, but is a dull white or brown. Dirt on the outside of the shell does not hurt the egg; washing hurts it very much more.

How to Preserve Eggs (Government's Process).—The old-fashioned method of pickling them in lime-water is fairly effective, but spoils the flavor. Some coat them with vaseline or olive oil. The Department of Agriculture at Washington says that the best preservative is water glass or sodium silicate, one part to ten parts of water, the mixture to be poured over the fresh eggs in jars, which should then be covered over and set in a cellar or other cool, dry place. The best way to keep a quantity is in a cold storage room, where the temperature is kept at about 31 to 33 degrees Fahrenheit by means of ice and salt or by means of refrigerating machinery.

Flavor of Eggs.—Most people think an egg is an egg and all are alike if fresh. This is a great mistake, as anyone who has hens can easily prove. The North Carolina experiment station of the United States Department of Agriculture fed a number of hens with their regular feed one-half ounce of chopped onion tops daily. At the end of the fifteenth day the eggs had a distinct flavor of onions. When the

amount of onion-top food was increased the eggs became wholly uneatable. This proved conclusively that flavor can be fed into eggs. In another experiment one lot of hens were fed a mixture of wheat shorts, cotton-seed meal and skim milk; another lot corn dough and cracked corn. The hens fed the corn ration laid fewer eggs, but these were larger and tasted better than the eggs laid by the hens that received the nitrogenous food; moreover, the latter eggs had a small yolk and did not keep well. From the egg standpoint, the most valuable chickens are the "Pekin Ducks," next the Light Brahmas, then the Black Langhams, the Black Minorcas and the Buff Cochins, as reported in the bulletins of the U. S. Experiment Station.

Canned Eggs.—Millions upon millions of eggs are now canned every year. The cold storage houses in the cities which buy enormous quantities of fresh eggs, when they are cheap in the spring, cannot avoid, in handling so many, to get thousands of cracked or broken eggs. At first these were thrown away. Now, however, all these are daily rushed over to the canning factory, where the yolks and whites are separated and each put up separately in air tight cans. There is nothing bad about canned eggs. If fresh and sweet when canned, they will keep so indefinitely, unless the cans are defective. They are used extensively by bakers and confectioners, and they are largely exported to foreign countries.

When spoiled eggs are canned they are sold to the tanners, who use them in tanning leather, especially in putting the fine gloss on costly leathers. For this purpose the spoiled eggs are fully as good, some say better, than fresh, and are much cheaper.

Dried or "Crystalized" Eggs.—A new way of preserving eggs successfully has recently been discovered, viz., that of drying or evaporating them cheaply. This is now done in a number of large factories by steaming and blowing dry hot air over the eggs after the shells are removed; nothing remains but a dry powder, which is further ground and put up in cans and labeled "dried egg," or evaporated egg, or "crystalized egg," according to the special method pursued. It looks somewhat like fine sawdust. The War Department at Washington purchased many thousand cans of this egg meal for use of its soldiers in Cuba, China and the Philippines. England also used many thousand cans to feed her soldiers in South Africa. It needs simply the addition of water to make an egg omelette, or to use in baking just as ordinary eggs are used, and it will keep indefinitely.

How to Prepare Spoiled Eggs.—Tanners' egg yolk may be prepared as follows: Break everything but black, rotten eggs into a revolving churn, and turn rapidly for twenty minutes; allow it to settle and skim off the foam, which is worthless except for chicken feed. After skimming, add 30 per cent. by weight of salt and one per cent. of boracic acid. Churn again until thoroughly mixed, and again skim off the foam. Then put in any old can or oil barrel (except coal oil) and keep in a cool place. This mixture has a marketable value of about five to six cents per pound.

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ADDENDUM.

The owner of this book should treasure the contents of the "Addendum pages," if he wants a quick recompense for the money paid for the book. The following are some of the subjects:

How to Detect Injurious Ingredients in Remedies.

When a remedy is recommended, or a prescription obtained, turn to the Addendum pages, and it can readily be seen, from the key, whether the medicine or mixture prescribed contains any injurious or poisonous substances.

ANTIPHLOGISTINE.

This comparatively new remedy is prescribed by physicians for over 20 different diseases. Anyone can use it, as it is applied externally. See addendum page.

The Doctor who first discovered it, sold out for \$1,000.00, and the purchasers have already made more than a Million Dollars out of it. It can be procured at all Drug Stores. Its use will save many Doctors' bills all through life.

Every person who is attacked with Pneumonia should apply this remedy at once; as life is perfectly safe with its use, as has been attested in hundreds of cases.

Another new remedy called "Thermofuge," obtainable in Drug Stores, is said to be as good as Antiphlogistine for similar diseases.

50 YEARS AGO, TO-DAY, AND 50 YEARS HENCE.

Three Views Illustrating the Result of the Great Destroyer of Human Health.

Parents, warn your children against the worst, the most insidious and destructive practice of the age.

THE AUSTRALIAN CURE FOR RHEUMATISM

Is so remarkably simple and *effective*, that no one, unless he knows from experience, would believe its wonderful curative power. It is so marvelous that every victim of acute and chronic Rheumatism should know of it. Dr. Clough, Health Commissioner, Denver, Colo., reports that it is superior to any other remedy ever used in or out of their hospitals. See Addendum pages for directions for its use.

A CERTAIN SPECIFIC FOR COUGHS AND COLDS.

Read in the Addendum pages how the Australians speedily cure any chronic case of colds and coughs. However, *no one will ever* need to endure a cold for one hour, if the simple Japanese Home Remedy, on page 702, is used when the cold is first taken.

HOW TO LIVE INDEFINITELY.

New Science of Securing Perfect Health and Happiness. Sickness and Sorrow Needless Woes.

This article in the book is well worthy of a careful perusal.

ANTIPHLOGISTINE.

All should know how to use this preparation, as it is a specific for various diseases, such as: Pneumonia, Croup, Sprains, Painful Menstruation and all Pelvic troubles. Tonsilitis, Sore Eyes, Bronchitis, Pleurisy, Inflamed Breasts, Inflammation of the Bowels, Tumors, Peritonitis, Boils, Erysipelas, Poisoned Wounds, Mumps, Felons, Burns, Sunburns, Frost Bites, Ulcers and any inflamed parts of the body.

DIRECTIONS:

Warm, then spread about the thickness of a silver dollar on the skin over the inflamed part and cover with cotton or heavy cloth. In from 12 to 24 hours it will peel off nicely like the peel from a banana. It is sometimes more convenient, especially where the part to be dressed is sensitive, to first spread it on cloth, then warm and apply.

In most cases it is best to redden the surface of the affected parts with equal parts of mustard and flour, wet with water. Spread it thinly on a cloth before applying. After it has been on for a few minutes, or as soon as the surface is red, remove and apply the Antiphlogistine. This can remain on for 24 hours, unless it has become dry and crumbly. Repeat each day until relieved.

In case of Pneumonia, apply the remedy on the back opposite the lungs, as well as on the chest.

In heating, do not allow water to get into the medicine. Bear in mind there is no economy in putting a dressing on as thin as tissue paper, for the thicker the more effective and the longer a dressing will last.

In mild bronchial affections, especially in children, the chest only, in many cases, need be dressed; in inflammation of the bowels, the entire abdomen should be covered; in affections of the joints, it should be applied about the joint, and several inches above and below; in leg ulcers, the dressing should cover not only the ulcer, but the surrounding swollen and hardened tissue.

AUSTRALIAN CURE FOR RHEUMATISM

EGG AND HOT WATER.

CURES WHEN ALL OTHERS FAIL.

Drink one gallon of Hot Water per day, taking a large glass tumbler full every hour. (A lady in Chicago has cured herself by using three gallons of water daily). Water carries out the impurities, it always goes out loaded with them.

First and second days: Take the white of an egg every two hours, and no other food whatever. It must be taken raw, and may be swallowed with a little water. This serves as both medicine and food.

Third day: Take the whole of the egg. If preferred, prepare by pouring boiling water over the egg, and letting it stand in the hot water for ten minutes. It is then soft boiled, and may be taken every two hours and a half, if appetite strongly demands.

Fourth day: Add to the above, broth of meat, (mutton or fowl) and some raw oysters, if desired.

Fifth day: The same as above, with addition of whole wheat muffins. If the muffins should happen to aggravate the disease, then they are to be omitted until the misery and pain ceases.

After this, avoid all articles of food, as much as possible, that contain starch and sugar, as they always more or less produce fermentation in the stomach. For at least one month, eat no bread that contains yeast. Use no coffee or tea.

AUSTRALIAN CURE FOR COUGHS AND COLDS.

Equal parts of Linseed Oil, Honey and Rum. Mix thoroughly. Dose, one teaspoonful every three hours. After the first day, take only before each meal and before retiring at night. This cures the most inveterate cases.

HORRORS OF WEARING TIGHT CLOTHING.

One of the most dangerous habits, not only for its effect on the individual but on the offspring is the ridiculous habit of wearing the clothing tight at any part of the body. Corsets are an abomination because they serve to disfigure the human form and by impeding the circulation cause degeneracy which is often apparent even in the grandchildren of the guilty person. Tight lacing of the waist by corsets or belts, which has been practiced by women for more than fifty years is now apparent by the change in the average form. In recent years young men have begun the silly practice which can only result in serious degeneracy. See illustrations on another page.

NEW CURE FOR SWELLED GLANDS.

Best Remedy for Chapped Hands.

One of the very best remedies for rough or chapped skin is to rub in lanoline, which may be had at all drug stores. To reduce swollen glands rub them well twice a day with lanoline mixed with a few grains of iodide of potassium.



Fig. 28.

TYPE OF PHYSICAL FORM OF WOMEN 50 YEARS AGO.



Fig. 29.

TYPE OF PHYSICAL FORM OF WOMEN OF TO-DAY.



Fig. 30.
50 YEARS HENCE.

Average physical form of women and children 50 years from now, at the present rate of degeneration, due to *this one cause alone*.

"GOD HELP THE RACE," if these conditions continue to prevail.

Let EVERY person, young ladies particularly, read the article in this book on this subject.



Fig. 31.

PHYSICAL FORM OF THE AVERAGE MAN OF TO-DAY.



Fig. 32.

TYPE OF AVERAGE MAN 50 YEARS HENCE

If wearing corsets, THE GREATEST CURSE TO THE HUMAN RACE, prevails.

Parents, warn your boys against this *idiotic* habit that is rapidly coming into vogue.



Fig. 33. PNEUMONIA.

With the timely application of Antiphlogistine, life in this disease is absolutely safe. This has been attested in hundreds of cases. For its use see page 748.



Fig. 34. TONSILITIS.

A few applications of Antiphlogistine will effectually heal this affliction. See page 748.



Fig. 35. SORE EYES.

Antiphlogistine is a simple and sovereign remedy for all cases of sore eyes. See page 748 for method of application.

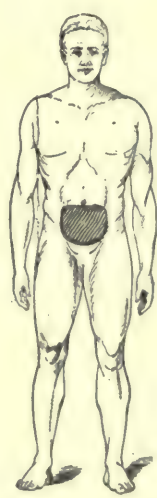


Fig. 36. Painful Menstrual and Abdominal Afflictions Promptly Cured by an application of Antiphlogistine. This is truly a boon for suffering women. See page 748.

HOW TO LIVE INDEFINITELY.

NEW SCIENCE OF SECURING PERFECT HEALTH AND HAPPINESS.

SICKNESS AND SORROW NEEDLESS WOES.

The Lord never intended that man should be sick any more than He wished him to starve. But He did not give him food directly nor perpetual health without effort. He did give him a fruitful earth and ability to make that earth yield food in plenty, and He did give him a mind wherewith to study and learn how to preserve his health indefinitely. Only mankind has worked so much harder to make the earth yield all sorts of material luxuries that he has neglected until these latter days to study his own power of getting well and keeping well. By mere accident some few have discovered this and that accounts for the miracles at shrines and at special resorts. It accounts too, for the real, though partial, success of the Christian Scientist, the Mind Healer, the Dowieite and others.

The truth as first fully promulgated by Harry Gaze of London, but also known, practiced and taught by several others both in this country and Europe, is that within each person lies dormant the power to cast out disease of all kinds and obtain perpetual health and full physical and mental strength and beauty.

The wise man of old said: "As a man thinketh in his heart so is he." If you permit no thought of disease and death to enter your mind you will have accomplished nine-tenths of the battle to stave off these foes. If you think you'll take cold you are ten times as apt to take cold as you are if you *think* you will not take cold. The other tenth lies in the simple safeguards of breathing plenty of fresh air and eating only suitable foods.

Each person needs at least 300 cubic feet of fresh air per hour to breathe. The air he breathes in supplies oxygen to burn up the refuse brought to the lungs. The air he breathes out contains the dead matter or waste. The body is constantly changing. The old idea was that the body is wholly renewed once in seven years, but according to Prof. Flammarton and other modern scientists, in a little less than one year the entire body, muscles, bones and all is renewed, all the old body having been in the meantime gradually consumed and discharged through the breath, the perspiration, the urine and the fæces. Hence it is absolutely necessary to keep these avenues of discharge acting fully and freely. Habits of breathing deeply and regularly, as you do naturally during sleep, should be formed. A good practice is to spend a few minutes every morning and evening in deep breathing, saying to yourself as you breathe in, "I'm taking in life," and when expelling the breath, "I'm breathing out death." For that is actually what you do. Tight clothing must of course be absolutely discarded.

Sufficient pure air taken into the lungs is an absolute specific against colds and pneumonia and is the greatest single factor in

maintaining the blood pure. Impure blood is the cause of nearly all disease, for the natural powers will destroy disease germs that find their way into the system if the blood is pure.

Eating too much is the chief cause of impure blood, next is the eating of improper and improperly cooked food. Third is anger or violent thoughts of any kind, worry or depression. It has been scientifically demonstrated that anger poisons the blood both in men and in animals. Unwholesome thought as well as unwholesome food vitiates the blood. The first step, therefore, toward attaining constant health is to form habits of right thoughts, the second to eat sparingly of proper food, third to breathe deeply of pure air.

Habits of right thought are formed by spending some time, ten minutes will help, an hour were better, in concentrating thought, the whole body at the time being relaxed. All thought is power, but calm, deliberate thought is most effective. Think of joy and a feeling of gladness steals over you. Think of health and you unconsciously begin to feel more comfortable, think of strength and you are already stronger.

As to food one needs to be guided by circumstances. Avoid sudden changes. Health and strength are promoted by avoiding meat but if accustomed to eating meat discard it little by little by substituting nuts, cheese and fruits.

No being possessing animal life subsists on cooked food, except man, and there is no being so unhealthy as man.

The ideal diet is nuts and fruits, preferably in the raw state, not green or overripe. This is known as the fruitarian diet that Adam and Eve lived on in the Garden of Eden. The vegetarian diet is intermediate between this and the animal diet. Vegetarian diet is better than animal but is not ideal, containing an excess of waste matter for the system to handle. Some people say they cannot eat fruit, but this is simply because they have taken it in connection with indigestible pastry or mixed with conflicting cream or sugar. Fruit should be eaten without either sugar or cream.

The ideal food for maintaining health and beauty, as already stated, is nuts and fruits as the exclusive diet. Prof. Gaze, while teaching classes all day and lecturing every evening at Los Angeles, Cal., lived for two months, January and February, on absolutely nothing else but nuts and ripe fruits. He took to this diet because he was then quite indisposed. At the end of the first month he found he had lost eight pounds in weight. At the end of the second month he found that he had regained the eight pounds in full and declared that he never felt better in all his life than at the end of those two months, nor had he ever had harder or more exacting work.

Exercise and activity are absolutely essential to life and health. It is a mistake to "retire" because of age. There is no "age," for the body is but little over one year old in any event and it is the thought that makes you become incapable.

Captain Diamond of San Francisco was 107 years old in 1903.

Yet he taught a class in physical culture and claimed to be able to walk 20 miles in a day without undue fatigue. At 70 he was an "old man," weak and near the end, according to the doctors. Then he learned of the power of thought and right eating and breathing and the result is apparent. A score of similar instances might be cited.

LIFE PROLONGED INDEFINITELY.

We know little of the life of early mankind but we are reasonably sure that some lived to be 500 and up to 900 years of age. But the thought of death, on seeing earthly things die, hastened their end. Today as ever since the earliest times every child is born and reared and passes through life in the belief that in a little time he must sicken and die.

Man is endowed with two minds, the conscious and the sub-conscious. The latter preserves the activity of the vital organs when in sleep and when by accident or otherwise we are unconscious. But it is directly subject to the influences of the conscious mind, and if this holds steadily to the belief in gradual decay and death, the sub-conscious will gradually lessen its action and thus cause decay and death.

The new science teaches that if we can live from infancy, or better yet, prior to birth, by the unconscious power of the parents' thought, in the belief and expectancy of permanent life, then life can be maintained indefinitely by merely following the plan of life already outlined, a plan that will sustain the body by giving it only the food and drink necessary for renewal of the worn and waste particles without undue deposit of excess matter which clogs the natural channels of harmonious existence.

If the child is taught this belief and made acquainted with his natural powers of sustaining life indefinitely and grows up in a realization of the supreme influence of his thoughts and beliefs there is no reason why he should not live forever as a human being in perfect health and with all his God-given capacity for enjoyment and happiness constantly retained, as the latest scientific investigations seem to prove.

Many imagine that to live the life that will give them perpetual health means that they must forego what they term the pleasures of life, but this everyone who has attained the higher life knows to be the opposite of the truth. In fact, the latest scientific study proves that the welfare of the body is best promoted, not by repression but by proper expression of the normal physical appetites and desires. When we have cultivated right habits of thought and have all our passions and appetites under intelligent control the pleasures of the physical nature are immeasurably prolonged and increased. Real joy and happiness are not attained through the isolation of the monk nor yet through ignorant self-indulgence of abnormal or acquired tastes, but they do follow the self-discipline necessary to obtain full mental control of bodily functions and the controlled expression of bodily appetites.

LIST OF MEDICINES IN PLAIN ENGLISH.*

The following shows how simple some remedies are that are employed by physicians in the treatment of diseases when the Latin names they use are translated into plain English. It also shows how many of the Drug remedies used are poisonous. When a patient has obtained a prescription, this list will enable him to readily ascertain whether it contains any poisonous Drug.

LATIN.	ENGLISH.	POISON.
Aqua Calcis	Lime Water	
Acetum	Vinegar	
Atropa Belladonna	Deadly Nightshade	Poison
Aconite	Monkshood	Poison
Argenti Nitras	Lunar Caustic	Poison
Acacia Gummi	Gum Arabic	
Allium Savitum	Garlic	
Amygdalus Amara	Bitter Almond	Poison
Acidum Hydrocyanicum	Prussic Acid	Poison
Adeps	Fat or Grease	
Acidum Tartaricum	Tartaric Acid	
Alumen	Alum	
Amygdala Dulcis	Sweet Almonds	
Aqua Ammonie	Hartshorn	
Aristolochia Serpentina	Snakeroot	
Arnica Montana	Arnica Flowers	Poison
Aurantii Cortex	Orange Peel	Poison
Acidum Carbolium	Carbolic Acid	Poison
Acidum Nitricum	Nitric Acid	Poison
Anti Toxin	Pus cultures from sick beasts	
Althea Rosea	Hollyhock	Poison
Arum Triphyllum	Indian Turnip	Poison
Artemisia Trigida	Mountain Sage	
Allium Cepa	Onion	
Amygdalus Persica	Peach Tree	
Asclepias Tuberosa	Pleurisy Root	
Ambrosia Alatoria	Ragweed	Poison
Articum Lappa	Burdock	
Anthemis Cotula	Mayweed	
Acidum Tannicum	Tannin	Poison
Antimonium	Antimony	Poison
Anthemis Nobilis	Chamomile	
Berberis Aquifolium	Wild Grape	
Copaifera	Balsam Copaiba	Poison
Coulophyllum Thalictrifolium	Blue Cohosh	Poison
Cucumis Colocynthis	Bitter Cucumber	
 Poison in large doses	
Piscidia Erythrina	Jamaica Dogwood	Poison
Calx	Lime	
Conium Maculatum	Poison Hemlock	Poison

* For additional list see "Materia Medica," page 479.

LATIN.	ENGLISH.	POISON.
Convalaria Racemosa.....	Solomon's Seal	
 Poison in large doses	
Chenopodium Anthelminticum.....	Worm Seed.....	
Carbo Ligni.....	Charcoal.....	
Capsicum Annuum.....	Cayenne Pepper.....	
Cornus.....	Dogwood.....	Poison
Carum.....	Caraway.....	
Chincona Rubra.....	Peruvian Bark (Quinine)....	
Creta Preparata.....	Prepared Chalk.....	
Crocus Sativus.....	Saffron.....	
Castaria.....	Catnip.....	
Cochlearia Amoricia.....	Horse-radish.....	
Camphora.....	Camphor.....	
Cantharis.....	Spanish Fly.....	Poison
Caryophyllus.....	Cloves.....	
Cassia Maralandica.....	Senna.....	
Cephaelis Ipecacuanha.....	Ipecac.....	Poison in large doses
Cystogen.....	Proprietary mixture.....	
Citrus Limonum.....	Lemon Juice.....	
Cetraria Islandica.....	Iceland Moss.....	
Convolvulus Jalapa.....	Jalap.....	
Creosotum.....	Creosote.....	Poison
Cupri Sulphas.....	Blue Stone.....	Poison
Diuretin.....	Mixture (Patent Medicine)...	
Datura Stramonium.....	Thorn Apple.....	Poison
Diosma Crenata.....	Buchu.....	
Digitalis Purpurea.....	Foxglove.....	Poison
Dioscorea Villosa.....	Wild Yam.....	
Eupatorium Perfoliatum.....	Boneset.....	
Epifagus Americanas.....	Beech Drops.....	
Eucalyptus Globulus.....	Blue Gum.....	
Eriodictyon Californicum.....	Yerba Santa.....	
Fragaria Vesca.....	Strawberry.....	
Ferula Asafoetida.....	Asafoetida plant.....	Poison
Ferri Ferrocyanuretum.....	Prussian Blue.....	Poison
Guaiaci Sorbilis.....	Guarana.....	Poison
Gelseminum.....	Yessamine.....	Poison
Glycyrrhiza.....	Liquorice.....	
Granatum.....	Pomegranate.....	
Gossypinum.....	Cotton Plant.....	Poison
Gentiana Lutea.....	Gentian.....	
Grindelia Squarrosa.....	Tar Weed.....	
Hammamelis Virginiana.....	Witch Hazel.....	
Hepatica Triloba.....	Liverwort.....	
Hydrargyrum.....	Mercury, Quicksilver..	Poison
Hydrargyri Chloridum Corrosidum ..	Corrosive Sublimate..	Poison
Hydrargyri Chloridum Mite.....	Calomel.....	Poison
Hydrargyri Massæ Pilulæ.....	Blue Mass.....	Poison
Hydrargyri Oxidum Rubrum.....	Red Precipitate.....	Poison
Hydrastis Canadensis.....	Golden Seal.....	

LATIN.	ENGLISH.	POISON.
<i>Humulus Lupulus</i>	Hops	
<i>Iris Versicolor</i>	Blue Flag	Poison
<i>Lingiber</i>	Ginger	
<i>Laurus Camphora</i>	Camphor	
<i>Leptandra Virginica</i>	Culvert Root	Poison
<i>Linum Usitatissimum</i>	Flaxseed	
<i>Lobelia Cardinalis</i>	Blue Lobelia	
<i>Lobelia Inflata</i>	Indian Tobacco	
<i>Kyrofine</i>	Proprietary mixture	
<i>Mentha Piperita</i>	Peppermint	
<i>Maranta Aurundinacea</i>	Arrowroot	
<i>Magnesiae Sulphas</i>	Epsom Salts	
<i>Marrubium Vulgare</i>	Horehound	
<i>Mel Despumatum</i>	Honey	
<i>Moschus Moschiferus</i>	Musk	
<i>Mentha Pulegium</i>	Pennyroyal	
<i>Mentha Viridis</i>	Spearmint	
<i>Nux Vomica</i>	Dogweed	Poison
<i>Nux Moschata</i>	Nutmeg	
<i>Nymphoe Odorata</i>	White Pond Lily	
<i>Oleum Morrhue</i>	Cod Liver Oil	
<i>Oleum Ricina</i>	Castor Oil	
<i>Oleum Tiglium</i>	Croton Oil	Poison
<i>Oleum Lini</i>	Linseed (flaxseed) Oil	
<i>Oleum Amygdalæ</i>	Oil of Almonds	Poison
<i>Oleum Olivæ</i>	Sweet (olive) Oil	
<i>Oleum Terebrithinum</i>	Turpentine	
<i>Oralis Stricta</i>	Sheep Sorrel	
<i>Potassa Hydras</i>	Caustic Potash	Poison
<i>Potassæ Nitras</i>	Saltpetre	
<i>Pimenta</i>	Allspice	
<i>Plumbi Acetas</i>	Sugar of Lead	Poison
<i>Plumbum</i>	Lead	Poison
<i>Papaver Somniferum</i>	Poppy Heads	Poison
<i>Pigmentum Indicum</i>	Indigo	
<i>Piper Nigrum</i>	Black Pepper	
<i>Potassæ Supertartras</i>	Cream of Tartar	
<i>Prunus Virginiana</i>	Wild Cherry	
<i>Pulv. Ipecac et opii</i>	Dover's Powders	Poison in large doses
<i>Prunus Persica</i>	Peach Leaves	
<i>Pix Liquida</i>	Tar	
<i>Pilocarpus Pennatifolius</i>	Jaborandi	
<i>Piscidia Erythrina</i>	Jamaica Dogwood	Poison
<i>Papaver Somniferum</i>	Opium	Poison
<i>Plantago Major</i>	Plantain	Poison
<i>Phytolacca Decandra</i>	Poke Root	Poison
<i>Polygonum Punctatum</i>	Smart Weed	
<i>Panax Quinquefolium</i>	Ginseng	
<i>Polemomeum Reptans</i>	Blue Bells	
<i>Paullinia Sorbilis</i>	Guarana	

LATIN.	ENGLISH.	POISON.
Polytrichum Juniperum	Hair-Cap Moss.	
Pinus Canadensis	Spruce.	
Pipsissema Umbellata.	Winter Green.	
Phenolgine.	Proprietary mixture.	Poison
Protargol	Proprietary mixture.	
Podophyllum	May Apple	Poison
Potassi Chloras	Potassium Chlorate.	Poison
Proto Nuclein	Made from blood of cattle and pigs.	Poison
Phosphorus		Poison
Quercus Alba	White Oak	
Quercus Insectoria	Gall Nut.	Poison
Rheuma	Rhubarb.	
Rhus Aromatica	Sweet Sumac.	Poison
Rubus Villosus	Blackberry.	
Rumex.	Yellow Dock.	Poison
Rhus Toxicodendron	Poison Oak.	Poison
Salvia Officinalis.	Sage.	
Scutellaria Lateriflora	Scull Cap	
Strychnia.	Strychine	Poison
Sulphate of Zinc		Poison
Sinapis Alba.	White Mustard	
Spiritus Atheris Nitrosi.	Sweet Spirits of Nitre.	
Saccharum Alba	White Sugar.	
Saccharum Lactis.	Sugar of Milk.	
Sagus Rumphii	Sago	
Sanguinaria Canadensis.	Bloodroot.	
Sinapis Nigra	Black Mustard.	
Smilax Officinale.	Sarsaparilla	
Sodæ Biboras	Borax	
Sodæ Carbonas	Baking Soda.	
Sodium Chloridum.	Salt	
Sodæ et Potassæ Tartras.	Rochelle Salts	
Sodæ Phosphas.	Phosphate of Soda.	Poison
Sodæ Sulphas	Glauber's Salts.	
Solannin Dulcamara.	Bitter Sweet.	Poison
Sulphur Rotundum.	Brimstone	Poison
Sanialea Marilandica	Black Snake Root.	Poison
Salix Niger.	Black Willow.	
Sambucus Canadensis	Elder.	
Spigelia Marilandica.	Pink Root	
Sulphas Quinia.	Quinine.	
Tanacetum.	Tansy	Poison
Tinctura Opii	Laudanum	Poison
Tinctura Opii Camphorata	Paragoric	Poison
Tannalbin	Albumin and Tannin.	Poison
Turnera Aphrodisiaca	Damiana Poison in large doses	
Taraxacum Dens Leonis	Dandelion Poison in large doses	
Trifolium Pratense.	Red Clover.	
Ulmus Fulva.	Slippery Elm.	:

PHYSICAL INDOOR EXERCISE FOR THE PROPER DEVELOPMENT OF THE HUMAN BODY.



FIG. 1.

FIRST EXERCISE.—Stand erect, with arms extended forward on a level with the shoulders, fists tightly clenched. With rigid muscles, bring both arms down to the sides. Then slowly raise them to the first position. Repeat ten to twelve times. Breathe deeply.



FIG. 2.

SECOND EXERCISE.—Stand erect, with arms extended to the sides on a level with the shoulders, fists tightly clenched, shoulders thrown back. With muscles rigid, bring the arms upward until the fists touch above the head, as in Fig. 2, meanwhile taking deep breath. Then return to the original position, with arms rigid, breathing out the while. Repeat ten to twelve times.



FIG. 3.

THIRD EXERCISE.—Stand with arms down at sides. Slowly drop the body perpendicularly toward the floor (raising arms meanwhile), exactly as if sitting down on the heels, as in Fig. 3. Return to erect position, on tip toes and repeat five or six times.

FOURTH EXERCISE.—Stand with arms at the sides, and muscles rigid. Swing arms upward and chest backward until arms are extended at full length over the head. Then with a forward movement, without bending the knees, touch the floor with the tips of fingers, as in Fig. 4. Return to former position with arms over head; then swing the arms down slowly to original position at the sides. Repeat ten to twelve times.



FIG. 4.



FIG. 5.

FIFTH EXERCISE.—Stand erect, with chest thrown out, arm extended horizontally. Bend body slowly to right and left alternately (one side and then the other), touching, if possible, tips of fingers to the floor, as in Fig. 5. Repeat six to ten times.

SIXTH EXERCISE.—Lie at full length on the back, with arms folded, and without bending the knees or raising feet from the floor, lift the body slowly 18 or 20 inches from the floor to the position shown in Fig. 6. Return slowly to original position. Repeat six to ten times.



FIG. 6.



FIG. 7.

SEVENTH EXERCISE.—Lie on the back on the floor. Slowly raise feet, without bending knees, until they get to a right angle with the body, as in Fig 7. Return to original position, and repeat four to twelve times.



FIG. 8.

EIGHTH EXERCISE.—Take a horizontal position, with face downward, with hands and toes resting on the floor (but not the body); then slowly lower the body until the chin touches the floor, as in Fig. 8. Return to former position. Repeat four to ten times.

These are always to be taken with doors and windows open.



FIG. 1.

SECOND EXERCISE: Stand with muscles relaxed. Raise each foot alternately a few inches, then let fall limply to the floor. Repeat four or five times. Then stand erect. Raise heels, balancing on toes. Return to former position. Repeat eight to ten times.

Fig. 2.



FIG. 2.

FIRST EXERCISE. Stand erect with arms at the sides. Take a deep inspiration, and hold breath during the exercise. Incline the body forward, lifting the chest as high as possible, with head thrown back, as indicated in Figure 1. After a moment, relax the muscles and exhale the breath. Return to original position. Repeat five to ten times.



FIG. 3.

FOURTH EXERCISE.
Stand with feet together. Relax the muscles. Then bend the body forward to the floor without bending knees. Rise slowly. Repeat five or six times. As in Fig. 4.



FIG. 4.

THIRD EXERCISE.
Stand at ease. Raise the right arm straight out at the side until the hand is higher than the head. Then allow the arm to fall limply against the side, and allow the body to follow. See Figure 3. Same with left arm. Repeat six to ten times.

INDIAN CLUB EXERCISES.



FIG. 1.

The possible figures that can be made in club swinging are almost innumerable. In all except the most elementary exercises the first or starting position is that shown in Fig. 1.

Fig. 2 shows a characteristic position in swinging circles front and back. A similar position to be formed alternately back and front, low or high.



FIG. 2.

Indian Clubs are recognized as among the very best of exercising agencies, but should be not over one-and a-half or at most two pounds in weight. A pair of hollow clubs 18 inches long, knobs not over $4\frac{1}{2}$ inches in circumference and body $12\frac{1}{2}$ inches around at the thickest part are generally considered as best adapted for club-swinging exercises.



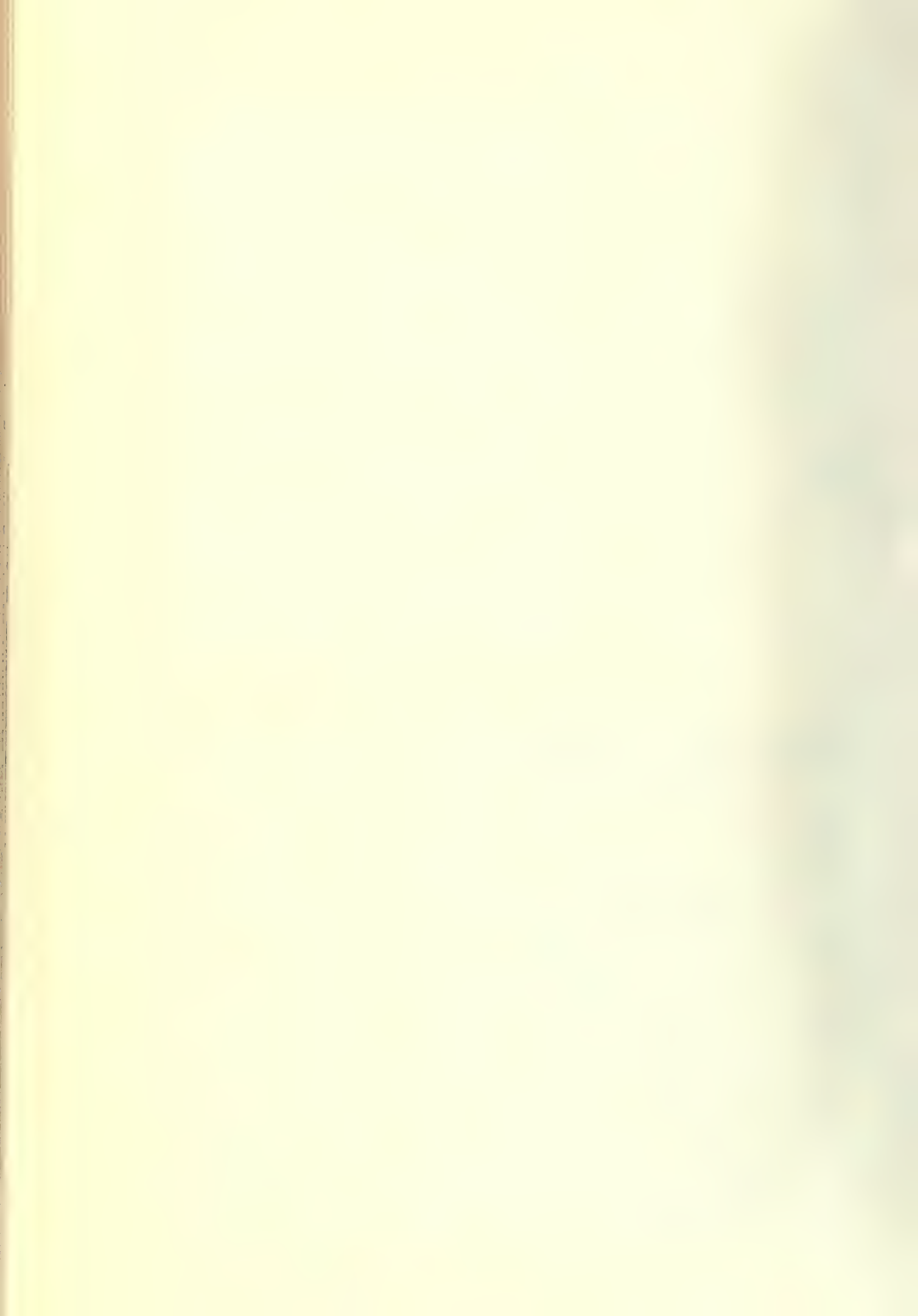
FIG. 3.

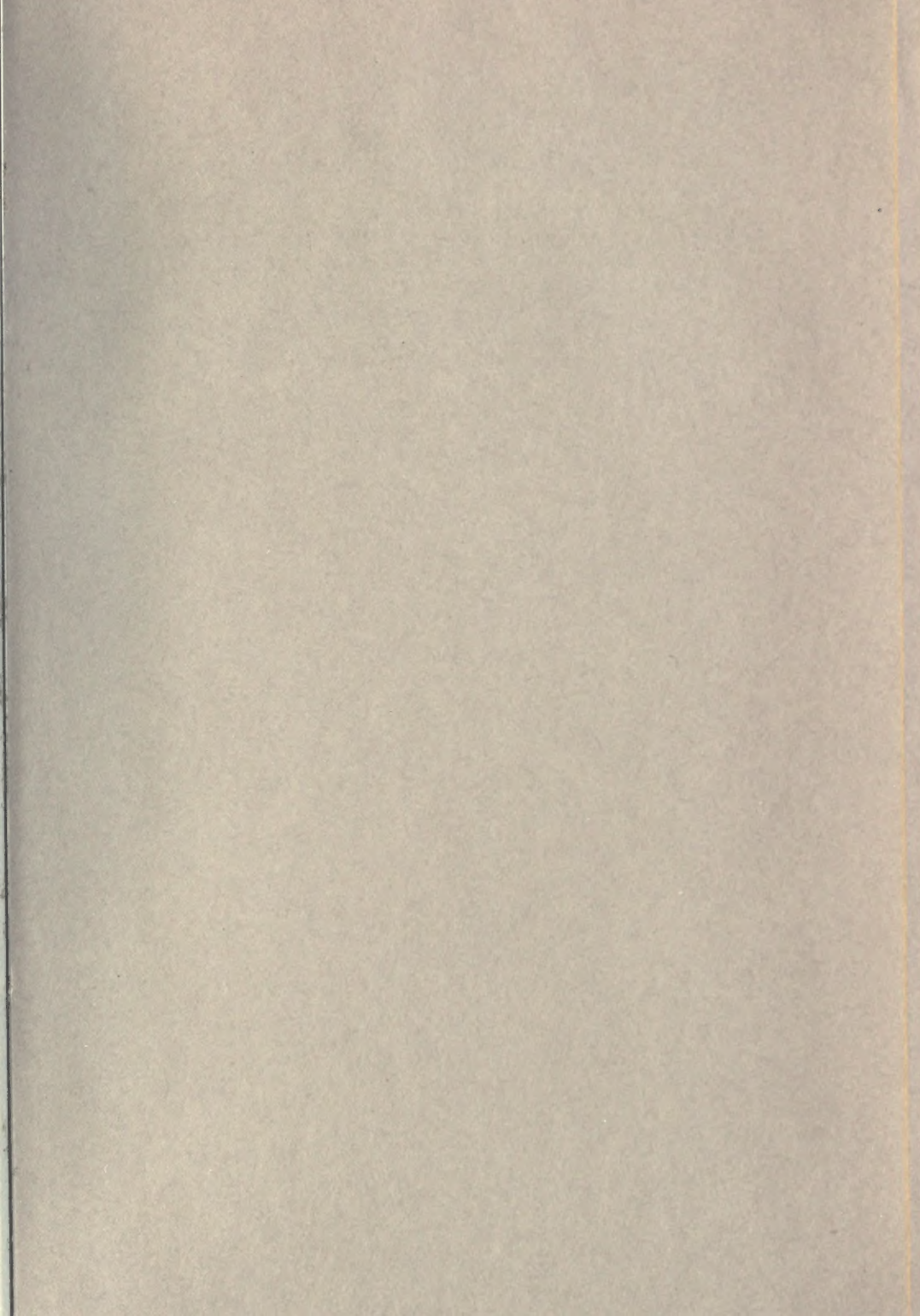
A more difficult feat is illustrated in Figs. 3 and 4, where double right hand and left hand circles back of the shoulders are made. For stiffening the muscles of the neck, arms and shoulders this is an excellent motion.

For preliminary exercise, swings straight out from the shoulder with one and with both clubs extended and swung half way around a circle, swings above and around the head, over and across the shoulder, in front and back of the body, or in circles over or under and in combinations can soon be learned and by diligent and regular practice, and immense amount of strength, agility and dexterity can be added to the muscles of the body and arms. See Fig. 4.



FIG. 4.







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